PROJECT MANUAL – Volume I

Booker T. Washington
209 North Gray Street
Sapulpa, Oklahoma 74066

VOLUME I
DIVISIONS 00 - 14
Project Manual

Project Number: 100-179
Date: September 3rd, 2025

STUDIO 45 ARCHITECTS

1648 Southwest Boulevard
Tulsa, Oklahoma 74104
918.392.4958
www.s45architects.com

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PROJECT
Booker T. Washington
209 North Gray Street
Supulpa, Oklahoma 74701

ARCHITECT OF RECORD

Marcus Fairless, AIA
Studio 45 Architects
1648 Southwest Boulevard
Tulsa Oklahoma 74107



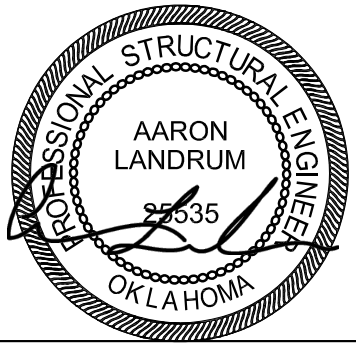
09.03.2025

Architect of Record

SECTION 00 0107
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PROJECT
Booker T. Washington
209 North Gray Street
Supulpa, Oklahoma 74701

STRUCTURAL ENGINEER OF RECORD



09.03.2025

Engineer of Record

PROJECT
Booker T. Washington
209 North Gray Street
Supulpa, Oklahoma 74701

CIVIL ENGINEER OF RECORD



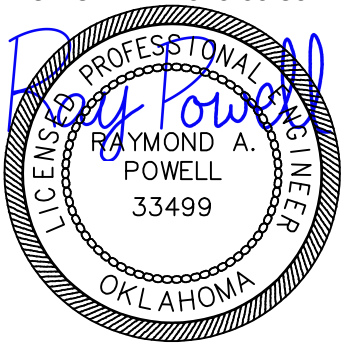
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Engineer of Record

PROJECT
Booker T. Washington
209 North Gray Street
Supulpa, Oklahoma 74701

MECHANICAL ENGINEER OF RECORD

Raymond A. Powell
CEC Corporation
WWW.CONNECTCEC.COM
OK CA#32 EXP: 2026-06-30



09.03.2025

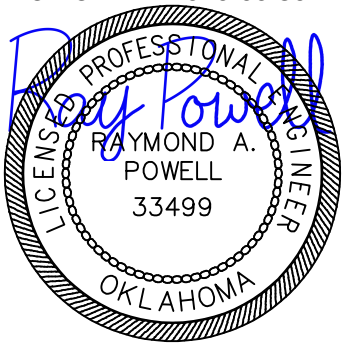
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PROJECT
Booker T. Washington
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Supulpa, Oklahoma 74701

PLUMBING ENGINEER OF RECORD

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OK CA#32 EXP: 2026-06-30



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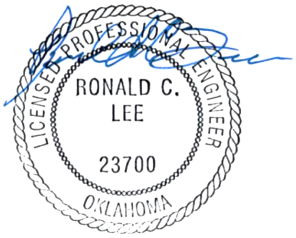
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PROJECT
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Supulpa, Oklahoma 74701

ELECTRICAL ENGINEER OF RECORD

Ronald C. Lee
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OK CA#32 EXP: 2026-06-30



09.03.2025

Engineer of Record

SECTION - 00 1116
SOLICITATION TO BID

SEALED PROPOSALS will be received by **The City of Sapulpa**, hereinafter referred to as Owner, until **2:00 p.m., Tuesday** on **October 21st, 2025** at The City of Sapulpa, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066 (Main Lobby) for furnishing labor and materials for construction of the renovation Booker T. Washington Recreation Center.

A NON - MANDATORY PRE-BID MEETING will be held at the City of Sapulpa, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066 (Main Lobby) at 10:00 AM on Tuesday October 7th, 2025. Access to the existing facility shall be available (209 North Gray Street, Sapulpa, Oklahoma 74066, Existing Gym) at the conclusion of the **NON - MANDATORY PRE-BID** on Tuesday October 7th, 2025**.**

BID QUESTIONS will be due by email to Katie Huisenga katie@s45architects.com no later than 5:00 PM on October 14th, 2025.

BIDS DELIVERY: Deliver bids to The City of Sapulpa, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066 (Main Lobby) by **2:00 PM** on Tuesday, **October 21st, 2025**.

ENVELOPES TO BE
MARKED: BID ENCLOSED
DO NOT OPEN
PROJECT: Booker T. Washington Recreation Center

A PUBLIC BID OPENING will be held at The City of Sapupla, 425 East Dewey Avenue, Sapulpa Oklahoma 74066 (Main Lobby), at **2:05 PM** on **Thursday, October 21st, 2025.**

Non-Consideration of Bids: Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays, and Holidays, before time set for opening bids, as well as bids received after time set for opening bids, will not be considered, and will be returned unopened.

A copy of the Drawings, Project Manual, and other Bidding Documents will be on file in above Property and Procurement office and open for public inspection twenty (20) days prior to bid opening date.

It is the Owner's intent, upon receipt of an acceptable bid, that the Contract will be awarded within Forty-Five (45) days after opening of bids and the written contract executed within Ten (10) days thereafter. The executed contract will not be returned until after receipt of the bonds and insurance, and the several completed certification documents found in this Project Manual.

Complete sets of the Drawings, Project Manual, and other Bidding Documents may be procured by prime bidders at **Arc Document Solutions**, 7022 E 41st St, Tulsa OK 74145 (918) 663-8100 at direct cost. Partial sets may be purchased by prime subcontractors at direct cost from the same printer. Prints are not required to be returned. Bidders are responsible for all costs associated with the preparation and submission of bids.

A cashier's check, certified check, or surety bond in amount of five percent (5%) of the bid shall accompany the sealed proposal of each bidder. Checks or surety bonds will be returned to unsuccessful bidders.

Prior to execution of the Contract, the Bidder to whom the Contract is awarded will be required to furnish bonds as follows:

1. Statutory Bond – 100% of Contract Amount
2. Performance Bond – 100% of Contract Amount.
3. One Year Defect Bond – 100% of Contract Amount

The Owner reserves the right to waive any irregularities or informalities and to reject any or all bids.

Bidding Documents are available for review at the following locations:

1. **Dodge Data & Analytics**
   Contact Info: support@construction.com OR dodge.docs@construction.com <(last used)
   877.784.9556 ext.9096
   Contact: Kendrick (updated 08.09.22)

2. **Southwest Construction News**
   Contact Info: thressie@swcnews.com OR prtulsa@swcnews.com <(last used)
   918.493.5066 (Tulsa location)
   Contact: Kathy, commercial projects (updated 08.09.22)

3. **iSqFt** (formerly known as Bid News Construction Reports)
   Contact Info: content@constructconnect.com
   800.364.2059 (follow prompts: 1 > 4, updated 8.09.22)

4. **E-Plan Bidding**
   Contact Info: eplan@eplanbidding.com
   573.447.7130
   Contact: Amber (updated 8.9.22)

Time of Completion and Liquidated Damages:

Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time as indicated on the Bid Form, and as subsequently agreed to in the Contract.
Work is not subject to liquidated damages, described in Section 00 7300 "Supplementary Conditions."

END OF SECTION 00 1116

PART 1 - GENERAL

1.1 BID FORMS

A. Bids shall be submitted on forms identical to the forms included in the Project Manual and in the quantity required below:
   1. Bid must be authoritatively executed. Bids carrying riders, alterations of construction time or qualifications, which modify the amount of Bid, as submitted, will be rejected as irregular.
   2. In case of difference between written words and figures in the Bid, the amount stated in written words shall govern.

B. Affidavits:
   1. Execute the following forms and include with Bid Form: (Refer to Document 00400)
      a. Non-Collusion Affidavit
      b. Business Relationships Affidavit
      c. Contractor's Qualifications Statement (AIA A305 – Contractor's Qualifications Statement).
   2. Bids containing incomplete or unsigned affidavits will be rejected.

C. Bid Bond: Each bid shall be accompanied by a Bid Bond as required in the Solicitations for Bids, pledging that the Bidder will enter into a contract with the Owner on the terms stated in his Bid and will furnish bonds as required for covering the faithful performance of the Contract and the payment of all obligations arising there under.

D. Bid Packet:
   1. Submit Bid Packet to the attention of Director of Property and Procurement of **The City of Sapulpa**, as indicated in the Solicitation for Bids, sealed in an inner envelope with an outer envelope, both labeled as follows:

      BID DOCUMENTS

   2.

      Project: Booker T. Washington Recreation Center:

      Attn:

      Bidders Name: _____

   3. Contents of Bid Packet:
      a. Bid Form
      b. Bid Bond
      c. Affidavits:
         1) Non-Collusion Affidavit
         2) Business Relationships Affidavit

3) Contractor's Qualifications Statement

d. Bid Security

4. Apparent low bidder will be required to submit a Schedule of Values within seventy-two (72) hours of bid date.

1.2 FINANCIAL STATEMENT

A. Bidders must submit to the owner a financial statement, experience record and equipment schedule, sworn to before a notary public. Any discrepancy discovered in sworn statements will constitute sufficient grounds for rejection of the bid or canceling of the contract, if awarded. The financial statement must reflect the true financial condition of bidder within the three (3) months next preceding date set for opening bids.

B. To be eligible for award of contract, bidder must be able to show that he is financially able to carry on the work, until such time as he receives the first payment under the contract, and to finance the work in between payments.

1.3 CONDITIONS RELATING TO CONSTRUCTION

A. Bidders are required to inform themselves fully of conditions relating to construction and labor under which the work will be performed. Contractor must employ such methods and means in carrying out of this work as will not cause any interruption or interference with any other Contractor.

B. Examination of Premises: Before submitting proposal for this work, each bidder must examine the premises, confirm all utility locations, sizes, pressures, etc., and satisfy himself as to existing conditions under which he will be obliged to operate.

1.4 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

A. Bidders shall promptly notify the Architect of any ambiguity, inconsistency or error, which they may discover upon examination of the Bidding Documents. Requests for clarification or interpretation of the Bidding Documents shall be made no later than 5:00pm on October 14th, 2025, in writing to: Katie Huisenga at Studio 45 Architects 1648 Southwest Boulevard, Tulsa OK 74104 katie@s45architects.com.

B. Interpretations, correction or changes of the Bidding Documents will be made by Addendum only. Information transmitted in any other manner will not be binding and Bidders shall not reply upon its accuracy.

C. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract, which modify or interpret the Bidding Documents by addition, deletion, clarification or correction. Addenda will be issued to each Bidder receiving a complete set of Bidding Documents. Each bidder shall acknowledge receipt of addenda on the Bid Form.

D. In case of an inconsistency between Drawings and Specifications or within either document, not clarified by addenda, the better quality or greater quantity of work shall be provided in accordance with the Architect's interpretation.

E. The Owner will not be responsible for any explanations or verbal interpretations of the Bidding Documents.

1.5 SUBSTITUTIONS

A. The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by a proposed substitution.

B. No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least TEN (10) DAYS prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

C. If the Architect approves any proposed substitution prior to receipt of Bids, such approval will be set for by Addenda. Bidders shall not reply upon approvals made in any other manner.

D. Where prior acceptance or substitutions is not required or where a proposed substitution is not given prior to acceptance, bidder shall base his bid on product specified and requirements of Division 01.

1.6 ADDITIONAL INFORMATION FOR BIDDERS

A. Contract: The Form of Agreement Between Owner and Contractor will be written on the "AGREEMENT" form, as included in the Project Manual, Document 00 500.

B. Bonds: Prior to execution of the Contract, the Bidder to whom the Contract is awarded will be required to furnish bonds in accordance with Document 00 7300, Article 11 as follows:
   1. Performance Bond – 100% of Contract Amount
   2. Statutory Bond – 100% of Contract Amount
   3. One Year Defect Bond – 100% of Contract Amount
   4. Bonds shall be executed on forms identical to the forms included in the Project Manual, Section 00 6000.

C. Permits: Contractor shall furnish all permits and cost, except for the initial Permit Application fee, which will be furnished by the Owner.

D. Contract shall comply in all respects with applicable, City, State and Federal laws, rules, regulations and other requirements in connection with Affirmative Action Equal Opportunity Non-Discriminatory Practices in areas of age, race, and employment of the handicapped, and prepare and submit such affidavits and certificate of compliance as may be required by such agencies.

E. Oklahoma Bidding and Construction Laws:
   1. Bidders and successful Contractors are required to comply with Oklahoma laws as it relates to construction of public buildings, including, but not limited to, Oklahoma Public Competitive Bidding Act of 1974, which is incorporated by reference into this document.

1.7 PRE-BID MEETING

A. A Pre-Bid Meetings will be coordinated with each bidding package. Meeting attendance is non - mandatory for all principal contractors and prime subcontractors.

B. The purpose of the conference is to familiarize bidders with requirements of the project and the intent of the Contract and Bid Documents and to receive comments and questions from interested bidders.

C. NON - MANDATORY PRE-BID MEETING
   1. Meeting Date: Tuesday October 7th, 2025.
   2. Meeting Time: 10:00 a.m. CDT, local time.
   3. Location: City of Sapulpa, 425 East Dewey Avenue, Oklahoma 74066.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 002113

1.1 NON- MANDATORY PREBID MEETING

A. Architect will conduct a Non - Mandatory Prebid meeting as indicated below:

1. Meeting Date: Tuesday October 7th, 2025.
2. Meeting Time: 10:00 a.m. CDT, local time.
3. Location: City of Sapulpa, 425 East Dewey Avenue, Oklahoma 74066.

B. Attendance:

1. Prime Bidders: Attendance at Prebid meeting is non-mandatory.
2. Subcontractors: Attendance is not mandatory, but any are welcome.
3. Notice: Bids will only be accepted from prime bidders.

C. Bidder Questions: Submit written questions to be addressed at Prebid meeting minimum of two business days prior to meeting.

D. Agenda: Non-mandatory Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:

1. Procurement and Contracting Requirements:

a. Advertisement for Bids.
b. Instructions to Bidders.
c. Bidder Qualifications.
d. Bonding.
e. Insurance.
f. Bid Security.
g. Bid Form and Attachments.
h. Bid Submittal Requirements.
i. Bid Submittal Checklist.
j. Notice of Award.

2. Communication during Bidding Period:

a. Obtaining documents.
b. Access to Project Web site.
c. Bidder's Requests for Information.
d. Bidder's Substitution Request/Prior Approval Request.
e. Addenda.

3. Contracting Requirements:

    a. Agreement.
    b. The General Conditions.
    c. General Requirements.
    d. Other Owner requirements.

4. Construction Documents:

    a. Scopes of Work.
    b. Temporary Facilities.
    c. Use of Site.
    d. Work Restrictions.
    e. Alternates, Allowances, and Unit Prices.
    f. Substitutions following award.

5. Separate Contracts:

    a. Work by Owner.
    b. Work of Other Contracts.

6. Schedule:

    a. Project Schedule.
    b. Contract Time.
    c. Liquidated Damages.
    d. Damages
    e. Other Bidder Questions.

7. Site visit.
8. Post-Meeting Addendum.

E. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees and others known by the issuing office to have received a complete set of Procurement and Contracting Documents. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.

1. Sign-in Sheet: Minutes will include list of meeting attendees.
2. List of Planholders: Minutes will include list of planholders.

END OF DOCUMENT 00 2513

DOCUMENT 00 3000
BID FORM – GENERAL CONTRACTOR (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: Booker T. Washington Recreation Center**.**

C. Project Location: 209 North Gray Street, Supalpa, Oklahoma 74066.

D. Owner: The City of Supupla.

E. Architect: Studio45, 1648 Southwest Boulevard, Tulsa, Oklahoma 74104.

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by S45 Architects and the Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of above-named Project, according to the requirements of the Procurement and Contracting Documents. Allowance No. #1 (50,000) **shall be** included in the base bid below.

1. _____ Dollars ($_____).
2. The above amount may be modified by amounts indicated by the Bidder on the attached Bid Supplement - Alternates and Bid Supplement - Unit Prices.

1.3 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 days after a written Notice of Award, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____ Dollars ($_____).

B. In the event Owner does not offer a Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to proceed to be issued by Architect and shall substantially complete the Work within _____ calendar days.

1.5 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.
4. Addendum No. 4, dated _____.

1.6 UNIT PRICING

A. Summary of Unit Prices: Enter each Unit Price at the indicated location on the Bid Form provided, or otherwise to the Construction Manager as directed.
   1. Unit Price 1: Rock.
      a. Provide a Unit Price per cubic yard for rock fill provided, either addition or deduction.
   2. Unit Price #2 Masonry Repointing and Reconstruction.
      a. Provide a Unit Price per square yard for Masonry Repointing and Reconstruction per specification section 04 9000.

1.7 SCHEDULE OF ALTERNATES

A NA

1.7 SCHEDULE OF ALLOWANCES

A. Allowance No. One: Lump-Sum Allowance - Include the sum of fifty-thousand ($50,000.00) dollars for third-party construction phase testing and inspection. Allowance shall be included in Base Bid.

1.8 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto:

1. Bid Form Supplement - Bid Bond Form (AIA Document A310).

2. AIA Document A305 – Contractor ’s Qualifications.

1.9 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor for the type of work proposed in the State of Oklahoma, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

B. Provide Contractor’s information for Contractor’s Qualification Statement.

1.10 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2024.

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witnessed By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.:_____(Affix Corporate Seal Here).

END OF DOCUMENT 00 4123

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. Provide Contractor's information for Contractor's Qualification Statement.

B. Attachment to the project manual.
   1. AIA Document A305 – 2020.
   2. AIA Document A305 – 2020 Exhibit A.
   3. AIA Document A305 – 2020 Exhibit B.
   4. AIA Document A305 – 2020 Exhibit C.
   5. AIA Document A305 – 2020 Exhibit D.

END OF DOCUMENT 00 3100

AIA® Document A305® – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:
(Organization name and address.)

SUBMITTED TO:
(Organization name and address.)

TYPE OF WORK TYPICALLY PERFORMED
(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:
(Check all that apply.)

- [ ] Exhibit A – General Information
- [ ] Exhibit B – Financial and Performance Information
- [ ] Exhibit C – Project-Specific Information
- [ ] Exhibit D – Past Project Experience
- [ ] Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION
The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

_____
CONTRACTOR'S Authorized Representative *(Signature)*

_____
(Printed name and title)

_____
Date

NOTARY
State of:
County of:
Signed and sworn to before me this day of

_____
Notary Signature
My commission expires:

ADDITIONS AND DELETIONS:
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AIA® Document A305® – 2020 Exhibit A

General Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the Seventh day of May in the year Two Thousand Twenty-Five
(In words, indicate day, month and year.)

ADDITIONS AND DELETIONS:
The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

§ A.1 ORGANIZATION
§ A.1.1 Name and Location
§ A.1.1.1 Identify the full legal name of your organization.

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

§ A.1.1.4 Identify the address of your organization's principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

§ A.1.2 Legal Status
§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

.1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.

.2 If your organization is a partnership, identify its partners and its date of organization.

.3 If your organization is individually owned, identify its owner and date of organization.

.4 If the form of your organization is other than those listed above, describe it and identify its individual leaders:

§ A.1.2.2 Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

§ A.1.3 Other Information

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§ A.1.3.1 How many years has your organization been in business?

§ A.1.3.2 How many full-time employees work for your organization?

§ A.1.3.3 List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

§ A.1.3.4 Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

§ A.2 EXPERIENCE

§ A.2.1 Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ A.2.2 State your organization's total dollar value of work currently under contract.

§ A.2.3 Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

§ A.2.4 State your organization's average annual dollar value of construction work performed during the last five years.

§ A.3 CAPABILITIES

§ A.3.1 List the categories of work that your organization typically self-performs.

§ A.3.2 Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

§ A.4 REFERENCES

§ A.4.1 Identify three client references:
(Insert name, organization, and contact information)

§ A.4.2 Identify three architect references:
(Insert name, organization, and contact information)

§ A.4.3 Identify one bank reference:
(Insert name, organization, and contact information)

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§ A.4.4 Identify three subcontractor or other trade references:
(Insert name, organization, and contact information)

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AIA® Document A305® – 2020 Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the Seventh day of May in the year Two Thousand Twenty-Five
(In words, indicate day, month and year.)

ADDITIONS AND DELETIONS:
The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization's latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

§ B.1.4 Identify your organization's preferred credit rating agency and identification information.
(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization's identification number or other method of searching your organization's credit rating with such agency.)

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than $75,000?
(If the answer is yes, provide an explanation.)

§ B.2.2 In the last five years has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 failed to complete work awarded to it?

.2 been terminated for any reason except for an owners' convenience?

.3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than $75,000?

.4 filed any lawsuits or requested arbitration regarding a construction project?

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§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 been convicted of, or indicted for, a business-related crime?

.2 had any business or professional license subjected to disciplinary action?

.3 been penalized or fined by a state or federal environmental agency?

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AIA® Document A305® – 2020 Exhibit C

Project Specific Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the Seventh day of May in the year Two Thousand Twenty-Five
(In words, indicate day, month and year.)

PROJECT:
(Name and location or address.)

CONTRACTOR'S PROJECT OFFICE:
(Identify the office out of which the contractor proposes to perform the work for the Project.)

TYPE OF WORK SOUGHT
(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

CONFLICT OF INTEREST
Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor's Project Office established?

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor's Project Office?

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor's Project Office that pertain to the Project.

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

§ C.2 EXPERIENCE RELATED TO THE PROJECT

ADDITIONS AND DELETIONS:
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User Notes: (681ba3935c6b8a86a3ff3e90)

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

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§ C.5.5 Available bonding capacity as of the date of this qualification statement:

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AIA® Document A305® – 2020 Exhibit D

Contractor's Past Project Experience

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount 0.00 Completion Date % Self-Performed Work 0.00	Contract Amount 0.00 Completion Date % Self-Performed Work 0.00	Contract Amount 0.00 Completion Date % Self-Performed Work 0.00	Contract Amount 0.00 Completion Date % Self-Performed Work 0.00
PROJECT DELIVERY METHOD	[ ] Design-bid-build [ ] Design-build [ ] CM constructor [ ] CM advisor [ ] Other:	[ ] Design-bid-build [ ] Design-build [ ] CM constructor [ ] CM advisor [ ] Other:	[ ] Design-bid-build [ ] Design-build [ ] CM constructor [ ] CM advisor [ ] Other:	[ ] Design-bid-build [ ] Design-build [ ] CM constructor [ ] CM advisor [ ] Other:
SUSTAINABILITY CERTIFICATIONS				

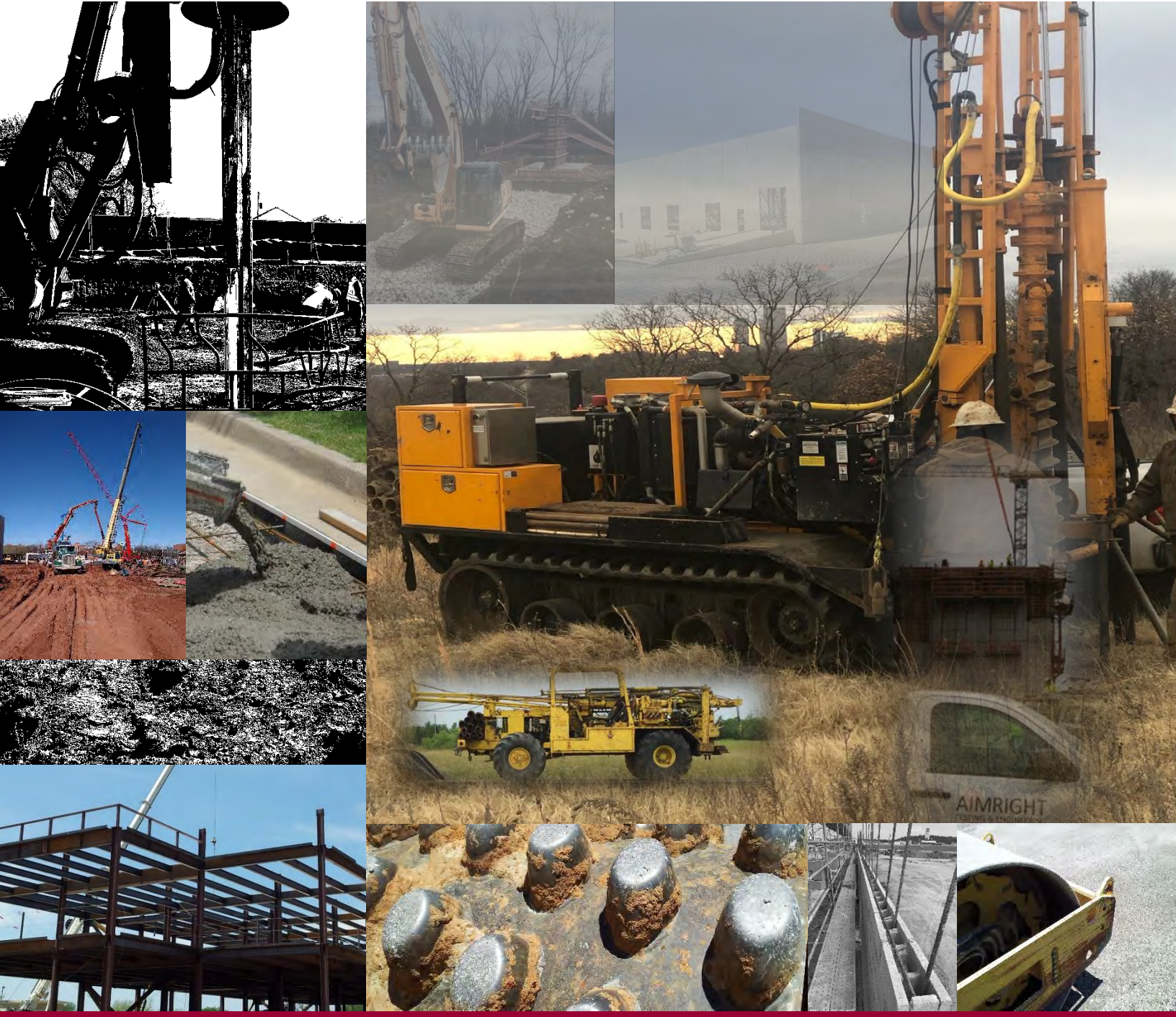
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User Notes: (681ba3ce6623095981ff6d4c)

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. A geotechnical investigation report for Project titled: **GEOTECHNICAL ENGINEERING REPORT AIMRIGHT PROJECT NUMBER 15780324 APRIL 11, 2024.** is an attachment to the project manual.

END OF DOCUMENT 00 3132



GEOTECHNICAL ENGINEERING REPORT

AIMRIGHT Project No. 15780324
April 11, 2024

Booker T. Washington Recreation Center

Prepared for:
City of Sapulpa

Construction Materials Testing • Special Inspections • Geotechnical Engineering

April 11, 2024

City of Sapulpa
425 E Dewey Ave
Sapulpa, OK 74066
(918) 224-3040

Attn: Joan Riley, City Manager
jriley@sapulpaok.gov

Re: Geotechnical Engineering Report
Project No. 15780324
Booker T. Washington Recreation Center
209 N Gray St, Sapulpa, OK 74066

It has been a pleasure serving you on this project. AIMRIGHT is pleased to submit this Geotechnical Engineering Report for the proposed construction planned at the referenced site. This report presents the findings of the geotechnical exploration and presents recommendations for design for the project.

We appreciate the opportunity to provide geotechnical consultation services for the subject project. We look forward to serving as your geotechnical engineer and construction materials testing laboratory for the remainder of this and future projects. Please do not hesitate to contact us with any concerns or questions regarding this report.

Respectfully submitted,

AIMRIGHT Testing & Engineering, LLC
CA No. 5794 (exp. 6/30/24)
Justin J. Boyd Jr., PE
Engineering Manager
jboyd@aimrighttesting.com
(918) 392-8041



Project Description

We understand that a new one-story structure (40k sf footprint, with a new gym, event center, offices, etc. including mezzanines in some areas) and associated parking/drive areas will be constructed on the referenced site. The final design has not been completed; however, the preliminary design includes a lower gym floor elevation that will require retaining walls along the north gym wall.

The site is developed with existing structures, pavements, sidewalks, above/below-grade infrastructure, and grass covered areas with trees/shrubbery. Select structures and site elements shall remain and others will be razed prior to beginning construction.

The site is generally level and sloping downwards from the north to the south with elevation changes of 794 ft to 745 ft, respectively. Cut/fill depths have not been finalized; however, we estimate that cut/fill of approximately 6 to 18 inches (possibly 2 to 5 feet at retaining wall) may be required to reach the final site elevations.

The structures are anticipated to be comprised of metal and/or concrete tilt panel framing and supported by a concrete slab-on-ground and shallow foundation system. Structure footings will be embedded and designed to bear in the native subsurface. Information regarding estimated structural loading conditions was provided; and we utilized maximum column loads of 40 to 125 kip and wall loads of 5 to 10 kip per linear foot in our engineering analyses.

The new parking/drive areas will more than likely be constructed with an asphalt or concrete surface and aggregate base course overlying a properly prepared subgrade. Information regarding estimated traffic loading conditions was not provided; however, we utilized an estimated 20-year traffic volume to be equal to 25,000 (standard) and 50,000 (heavy duty) equivalent 18-kip single-axle loads (ESALs).

Scope of Services

The primary purpose of this report is to provide geotechnical engineering recommendations for the proposed site development. Our Scope of Services consisted of the following:

1. Drilling sixteen (16) soil test borings (borings) to depths of approximately 10 feet.

2. Performing laboratory testing of selected soil samples obtained from the borings.

3. Providing engineering analysis and preparation of this report discussing, in general, project description, our scope, exploration, testing, analysis, and recommendations.

The Boring Location Plan, Boring Logs, and other supporting data are presented in the Appendices to this report. Our Scope of Services did not include a survey of boring locations and elevations, rock coring, quantity estimates, preparation of plans or specifications, slope stability analysis, or the identification and evaluation of environmental aspects of the project site.

AIMRIGHT located the borings in the field by making measurements from known existing site features. No claim is made as to the accuracy of the locations shown on the Boring Location Plans, and they should be considered approximate.

The borings were advanced using an ATV-mounted drill rig equipped with an automatic hammer and rotary continuous flight augers. Representative soil samples were obtained using a standard 2-inch outside diameter split-barrel sampler in general compliance with the Standard Penetration Testing (SPT) method of the American Society of Testing and Materials (ASTM) D1586 standard to evaluate the consistency and general engineering properties of the subsurface soils.

The number of blows required to drive the split-barrel sampler three (3) consecutive 6-inch increments is recorded, and the blows of the last two 6-inch increments are added to obtain the SPT N-value in blows per foot (bpf) representing the penetration resistance of the soil. At regular intervals within the borings, split-spoon samples were visually classified based on texture and plasticity.

During the drilling process, all encounters with groundwater, if any, were recorded. Upon completion of drilling, all borings were backfilled per OWRB requirements and topped with concrete and/or asphalt patch compound, if applicable.

The samples obtained from the geotechnical exploration were transported to the AIMRIGHT laboratory where representative samples were selected for testing. Testing consisted of Atterberg limits, sieve analysis, and determination of moisture content in general accordance with the ASTM testing procedures.

Laboratory Testing

Laboratory tests were conducted on selected samples in general accordance with ASTM standards. The laboratory testing performed for this project consisted of Atterberg Limits (ASTM D4318), Sieve Analysis – No. 200 Sieve Wash Method (ASTM D1140), and Moisture Content (ASTM D2216) testing. The test results are presented on the Boring Logs and the results are summarized below.

Boring No.	Depth Interval (ft)	Moisture Content (%)	Finer than No. 200 Sieve (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index
B-1	0 to 1.5	19.8	96.0	54	20	34
B-2	1.5 to 3	17.4	76.8	29	15	14
B-4	1.5 to 3	16.1	88.0	29	15	14
B-5	0 to 1.5	21.5	75.4	36	18	18
B-8	1.5 to 3	13.4	63.1	24	15	9
S-1	0 to 1.5	20.4	95.4	49	18	31
S-2	1.5 to 3	18.1	89.3	54	20	34
S-3	1.5 to 3	24.1	89.9	56	18	38
S-4	1.5 to 3	24.7	74.3	39	17	22
S-7	0 to 1.5	15.1	50.6	28	18	10

Subsurface Conditions

The subsurface conditions outlined below represent a general interpretation of the boring data using normally accepted geotechnical engineering judgments. The transitions between soil strata are usually less distinct than shown on the Boring Logs.

Stratum	Depth Interval	General Description of Materials
Surface	2 to 4 inches	organic laden soils (topsoil) sampled as silty sand/sandy silt with organics and root matter; existing pavement section
Native Soils	0 to 6 feet	medium stiff to very hard lean, lean-to-fat, fat clay with varying amounts of clay, silt, sand, and rock fragments
Weathered Rock	1.5 to 10 feet	highly weathered, poorly cemented sandstone and soft shale

Auger refusal was encountered boring B-8 and S-6 at depths of 11 and 6.125 feet, respectively, and is defined as material that could not be penetrated with the drill rig equipment which may have been caused by rock, large boulders, rock ledges, lenses, seams, or the top of parent bedrock.

Native soils comprised of low to high plastic clay capable of low to high shrink/swell potential was encountered in the borings at or just below the surface and extending down to varying depths. With respect to shrink/swell, due to the anticipated moisture volumetric changes throughout the seasonal wetting/drying cycles, a potential vertical rise (PVR) range of approximately 0.5 to 1.2 inches (or more) is estimated for the near surface soils within the upper 5 feet. The structure subgrades should be prepared as described in this report to reduce the PVR potential to or less than 1 inch (total) and ½ inch (differential).

Groundwater

Groundwater was not encountered during or at the completion of drilling in any of the borings. Water traveling through soil and rock is often unpredictable and may be present at shallow depths. Due to the seasonal changes in groundwater and the unpredictable nature of groundwater paths, groundwater levels will fluctuate. As such, groundwater levels at other times of the year may be different than those described in this report.

Generally, the highest groundwater levels occur in late winter and early spring and the lowest levels in late summer and fall. Therefore, it is necessary during construction to be observant for groundwater seepage in excavations to assess the situation and make necessary changes. Where applicable, the contractor should determine the actual groundwater levels at the time of construction.

Site Preparation and Earthwork

Before proceeding with construction, AIMRIGHT recommends conducting a pre-grading meeting to discuss recommendations as outlined in this report. Where appropriate, existing utilities beneath the construction footprints should be properly abandoned; or, should be removed and backfilled with properly compacted engineered fill as outlined in this report.

Any existing structures, pavements, site elements, foreign stockpiles, topsoil/vegetation, wet, soft, or loose soils and any other deleterious non-soil materials should be removed to a minimum distance of 2 and 5 feet beyond the parking/drive area and structure footprints, respectively.

Within the structure footprints plus 5 feet beyond, we recommend that a minimum depth of 18 inches of the existing soil subgrade elevations be over-excavated and replaced with properly compacted engineered fill or native soils stabilized with a lime or other appropriate additive. Any flatwork (i.e., sidewalks, canopy footings, ramps, patios, equipment slabs, etc.) that are beyond the 5 feet of the footprints and are considered sensitive to movement should be included within the over-excavation footprint.

Upon completion of required excavations, proof-rolling of the subgrade with a 20 to 30-ton loaded truck or other pneumatic-tired vehicle of similar size and weight should then be performed. Proof-rolling should be performed during a time of good weather and not while the site is wet, frozen, or severely desiccated. The proof-rolling observation is an opportunity for the geotechnical engineer to locate inconsistencies intermediate of our boring locations in the existing subgrade. All unsuitable materials observed during the evaluation and proof-rolling operations should be over-excavated and replaced with compacted fill or stabilized in place. The possible need for, and extent of over-excavation and/or in-place stabilization required can best be determined by the geotechnical engineer at that time.

The upper 8 inches of the existing subgrade in construction areas shall then be scarified, moisture-conditioned and re-compacted to at least ninety-five percent (95%) of the maximum dry density and within ±2 percentage points of the optimum moisture content as determined by a Standard Proctor (ASTM D698). The moisture content and compaction shall be maintained prior to beginning any fill or aggregate placement and/or construction. Depending on weather conditions prior to and during construction, the near surface soils may need moisture-conditioning to sufficiently enable adequate scarifying and compaction.

We note that some of the near surface materials (i.e., silty clayey sand, sandy silt, silty clay, silt, etc.) will often exhibit shearing as open subgrades under wheel loads and will not hold up well to construction activities, especially during wet periods. A layer of aggregate base or crushed stone quickly placed after subgrade preparation and verification will help confine the subgrade soils and reduce imminent disturbance from construction activities.

Excavation Difficulties

Highly weathered, poorly cemented sandstone and soft shale was encountered in the borings beginning at depths of approximately 1.5 to 6 feet and extending down to the termination depths.

Auger refusal was encountered boring B-8 and S-6 at depths of 11 and 6.125 feet, respectively.

We anticipate the near-surface soils above these depths at the site can be excavated with pans, scrapers, backhoes, and front-end loaders using conventional means and methods.

Our experience indicates rock in a weathered, boulder, and/or massive form may vary erratically in location and depth within the referenced site. Therefore, there is always a potential that these materials could be encountered at shallower depths between the boring locations and should be anticipated during construction.

Installation or excavation of proposed subgrade, foundations, or underground utilities (depending on layout and planned bottom elevations) within some portions of the site will likely require jackhammering, coring, ripping, or other suitable methods to remove these materials.

As stated previously, we recommend that a minimum depth of 18 inches of the existing site elevations be over-excavated and replaced with properly compacted engineered fill or native soils stabilized with a lime or other appropriate additive. It should be noted that rock was encountered within the upper 1.5 to 3.5 feet in the borings and the over-excavation may be terminated upon encountering rock.

Excavation Near Structures

Caution should be exercised when excavating immediately adjacent to existing structure foundations and the following should be considered.

The contractor should consider conducting excavations along the building structure perimeter footings in shorter segments (i.e., ≤ 10 feet in length parallel to existing foundation) and backfilling with properly compacted engineered fill with hand-held or smaller-sized equipment having a maximum pre-compacted thickness of 4 to 6 inches prior to moving to the next section.

When determined applicable, appropriate shoring techniques for existing structures and/or foundations should be utilized, and the contractor shall have the necessary project approval and experience in executing such activities.

Similarly, due to the proximity of the existing adjacent structures, larger compaction equipment vibrations may disturb, crack or damage existing structural elements. The existing conditions of the structures should be documented before beginning earthwork operations.

Site Drainage

An important aspect to consider during development of this site is surface water control. During the initiation of grading operations, we recommend that the grading contractor take those steps necessary to enhance surface flow and promote rapid clearing of rainfall and runoff water following rain events.

It should be incumbent on the contractor to maintain favorable site drainage during construction to minimize deterioration of otherwise stable subgrades.

Permanent positive drainage should be provided around the perimeter of the structures to minimize moisture infiltration into the foundation and/or subgrade soils. We recommend areas adjacent to the structures be provided with a fall of at least 6 inches for the first 10 feet outward from the structure areas.

All grades must provide effective drainage away from the structures during and after construction. Water permitted to pond next to the structures can result in unacceptable differential floor slab movements and cracked slabs and/or walls.

After construction, AIMRIGHT recommends verifying final grades to document that effective drainage has been achieved. Grades around the structures should also be periodically inspected and adjusted as necessary, as part of the structure's maintenance program.

Sprinkler mains and spray heads should be located a minimum of 5 feet away from the structure lines. Low-volume, drip style landscape irrigation should not be used near the structures.

Roof runoff should be collected in drains or gutters. Roof drains and downspouts should be discharged onto pavements which slope away from the structures or downspouts should be extended a minimum of 10 feet away from the structures.

Cut and Fill Slopes

From a general slope stability standpoint, we recommend that unreinforced fill slopes (where required to raise site grades) be sloped at 3(H):1(V) or flatter. The tops and bases of all slopes should extend at least 10 feet horizontally beyond the building limits before sloping.

Fill slopes placed over existing slopes should be adequately benched or keyed into the existing slopes so that fill is not placed and/or compacted on a sloping subgrade or vertical wall excavation. The benches will help facilitate compaction, reduce the potential for high differential settlements over short distances, and increase the overall global stability of the constructed fill.

Slopes should be protected with silt fencing during construction, stabilized and hydro-seeded or similarly seeded for permanent protection. We note that surficial sloughing/erosion of the slope face soils is most likely to occur until the face of the slopes are completely stabilized with vegetation.

Similarly, to reduce sloughing/erosion, surface water should be diverted away from the slope crest and face for both temporary and permanent slopes. It may be necessary to utilize stabilization materials (turf-reinforcement mat or similar), depending on the conditions encountered during the slope construction.

All fill materials should be placed under the full-time control and supervision of a qualified geotechnical engineer. All fill materials should be adequately compacted, as outlined in this report, and where applicable, all slopes should be seeded and maintained as soon as possible after construction.

Fill Material

A sample of each material type should be submitted to the geotechnical engineer for evaluation. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

All fill material in structural areas (including utility backfill) should be placed in continuous, horizontal lifts having a maximum pre-compacted thickness of 9 inches. Aggregate base should have a maximum pre-compacted thickness of 6 inches; and fill compacted with hand-held or smaller-sized equipment having a maximum pre-compacted thickness of 4 to 6 inches.

Each lift should be compacted to at least ninety-five percent (95%) of the maximum dry density and within ±2 percentage points of the optimum moisture content as determined by a Standard Proctor (ASTM D698), unless noted otherwise and maintained throughout construction activities.

A minimum of two (2) field tests to determine in-place density and moisture content should be performed per lift for each 2,000 and 5,000 sf within structural and parking/drive footprints, respectively.

Engineered Fill

Engineered fill should consist of approved materials that are free of organic matter and debris, exhibit a maximum plasticity index (PI) of 18, maximum liquid limit (LL) of 40, and contain a maximum rock size of 1.5 inches.

Native Soils

Native soils could be used as fill; whereby, upon re-use, the soils meet the requirements for engineered fill as stated in this report. Soils that do not meet engineered fill requirements will be exposed during earthwork activities. AIMRIGHT recommends conducting additional soil sampling and laboratory testing of any excavated or cut native soils during completion of grading activities to determine characteristics prior to beginning placement in structural areas.

AIMRIGHT estimates that approximately 4 to 6 percent (based on the soil's compacted dry weight) hydrated lime would be required to reduce the PI of the native soils to 18 or less. The actual amounts of lime or other appropriate additive should be determined in the field and shall be performed and monitored in general accordance with current ODOT Standard Specifications for Highway Construction Section 307 Subgrade Treatment.

Aggregate Base

Aggregate base shall meet the requirements for ODOT Type A, and beneath pavements shall be compacted to at least ninety-five percent (95%) of the maximum dry density and within ±2 percentage points of the optimum moisture content as determined by a Modified Proctor (ASTM D1557).

Lateral Earth Pressures

Lateral earth pressures vary as a function of construction sequence, type of backfill and retained soil, the rigidity of the retaining structure and the magnitude of any surface loading, if any, including stresses induced by adjacent building or wall loads on the retained soils. Adjacent footings or other surcharge loads may also exert appreciable additional lateral pressures. The effect of surcharge loads should be added to the recommended earth pressures to determine total lateral stresses.

Excavated in-situ or imported soils should be approved, placed, and compacted as outlined in this report. The values provided for soil types encountered at the site that are prepared in accordance with this report are illustrated, however, actual parameters are dependent on bearing material exposed and/or placed during construction. Values are provided for guidance and should only be utilized by experienced engineers and designers.

Material Type	γ	Φ	K_a	K_o	K_p
Clay w/ trace sand	90 to 110	5	0.84	0.91	1.19
Sandy Clay or Clayey Sand	110 to 115	15	0.58	0.74	1.69
Silty Sand or Sand w/ Silt	115 to 125	30	0.33	0.50	3.00
Washed Aggregate	90 to 105	35	0.27	0.43	3.69

γ - total unit weight (pcf)

Φ - angle of friction (°)

K_a - Rankine active earth pressure coefficient

K_o - Rankine at-rest earth pressure coefficient

K_p - Rankine passive earth pressure coefficient

All material to be considered retained backfill should extend a minimum distance of 0.5 times the wall height laterally from the heel of cantilever wall footings. In backfilling against the walls, care should be taken to prevent the backfill from being over compacted, as this could result in excessive lateral stresses against the walls. Heavy equipment should not operate within 5 feet of walls to prevent excess lateral earth pressures.

All retaining walls should be provided with a positive drainage system, so they are not subject to hydrostatic pressures. We recommend that a minimum one-foot-wide zone of free-draining washed aggregate be constructed adjacent to the back of the walls and extend down to a foundation drain (perforated drainpipe).

Washed aggregate should be placed in lifts no greater than 2 feet in thickness and compacted with a backhoe bucket or similar method. The washed aggregate should be placed using a separation geotextile at the interface between the remaining backfill material. The foundation drain should be positively graded to allow drainage of any water that may collect in the wall backfill.

Slab-on-ground Design

The structure subgrades should be prepared as described in this report. Four (4) inches or more of granular base should be placed over the final soil subgrade and shall meet the requirements outlined below.

Minimum Finer than 1.5-in Sieve	100%
Maximum Finer than No. 200 Sieve	15%
Maximum Plasticity Index	6

The modulus of subgrade reaction, k, values illustrated below are based on a 30-inch diameter plate load test.

k, at soil subgrade	100 psi/in
k, w/ 4 inches of Granular Base	125 psi/in

At the time of concrete placement, the granular base should be moist, but free of any self-draining water. If floor coverings are susceptible to moisture damage by moist floor conditions (capillary moisture), a vapor retarder should be placed below the slab-on-ground in accordance with the most recent addendum to ACI 302.1R-04 / 302.2R-06 and other current industry recommendations for use and placement of vapor retarders.

Shallow Foundation Design

The project structural engineer should determine the final foundation sizes based on the actual design loads, building code requirements, and other structural considerations. Structure foundations may be designed utilizing the following parameters.

Maximum Wall Loads	5 to 10 kip/ft
Maximum Column Loads	40 to 125 kip
Approved Bearing Material	native soils/rock
Net Allowable Bearing Pressure (FS ≥ 2.5)	3,000 psf
Total Unit Weight, γ	110 to 120 pcf
Coefficient of Sliding Friction, μ	0.27 to 0.38
Angle of Friction, ø	15°
Rankine Passive Earth Pressure Coefficient, K_p	1.70
Minimum Footing Embedment	24 inches
Minimum Wall Footing Width	18 inches
Minimum Column Footing Width	30 inches
Estimated Total Settlement	≤ 1 inch
Estimated Differential Settlement	≤ ½ inch
2018 IBC Earthquake Loads Site Class	C

The recommended net allowable bearing pressure is based on foundations within approved bearing materials and is the pressure more than the minimum surrounding overburden pressure at the footing base elevation.

Values provided for material encountered at the site and/or anticipated import material that are prepared in accordance with this report are illustrated, however, actual parameters are dependent on bearing material placed and/or exposed during construction. Values are provided for guidance and should only be utilized by experienced engineers and designers. Exclude total passive pressure resistance within 2 feet of the adjacent lowest final site elevation.

Minimum depth applies to both perimeter footings and foundations in unheated areas. Minimum depth will provide frost protection and reduce the potential for moisture variation below the bearing level. Interior foundations should extend at least 12 inches below the final adjacent subgrade to provide minimum confinement.

The magnitude of the settlements will be highly influenced by the variation in excavation requirements across the structure footprint, the distribution of loads, and the variability of underlying soils.

Shallow Foundation Construction

All exposed foundation subgrades should be re-compacted, observed, evaluated, and verified for the design soil bearing pressure by the geotechnical engineer after excavation and prior to concrete placement. This evaluation should include, as a minimum, Dynamic Cone Penetrometer (DCP) testing at the planned bearing elevations at intervals of no less than 35 feet and extending to depths of at least 3 feet below the bearing elevations.

If unsuitable material is encountered during foundation bearing grade testing and inspections (DCP Testing), foundations should; 1) extend deeper to a more suitable bearing material and bear directly on this material; 2) extend deeper to a more suitable bearing material and backfill with lean concrete to the designed bottom of footing elevation (see Figure 1); 3) extend deeper to a more suitable bearing material and backfilled with ODOT Type A aggregate base (see Figure 2). If option 3 is selected, the over-excavation should extend laterally to a minimum of ⅔ of the total depth of excavation.

To reduce differential settlement, it is imperative to ensure that all shallow foundations bear on a minimum of 12 inches of similar material. Where applicable, to prevent a "point-load" bearing condition where the native soils adjoins weathered rock within wall/column footings, we recommend over-excavating the weathered rock to a minimum depth of 12 inches within the entire length of the wall/column footing and backfilling with properly compacted ODOT Type A aggregate base. Alternatively, native soils may be over-excavated down to the weathered rock and backfilled with lean concrete to the designed bearing elevation as illustrated in Figure 1.

Foundation excavations must be maintained in a drained/de-watered condition throughout the foundation construction process and water should not be allowed to pond in any excavation. Excavations for footings should be made in such a way as to provide bearing surfaces that are firm and free of loose, soft, wet, or otherwise disturbed soils.

Foundations should be concreted as soon as practical after they are excavated, and concrete should also not be placed on frozen or saturated subgrades. When applicable, it is recommended that a 2 to 4-inch-thick "mud mat" of lean concrete be placed on the bearing soils to help protect the bearing surface from rainfall or adverse construction activities.

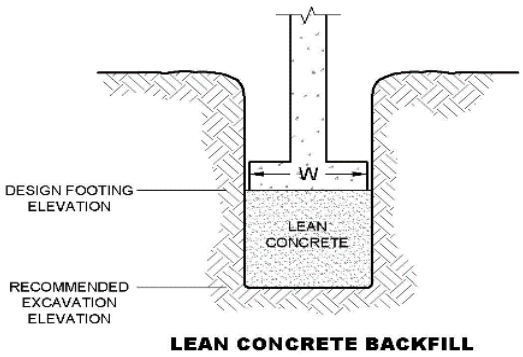


Figure 1

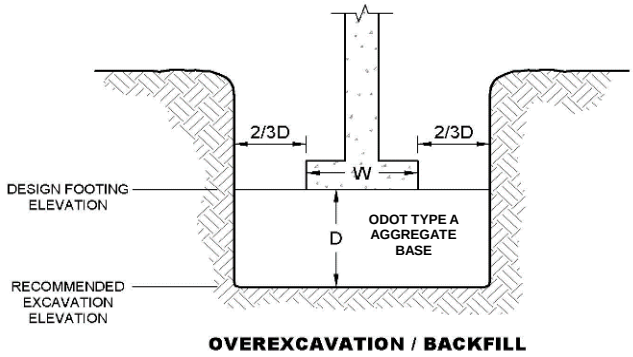


Figure 2

Note: Figures are shown for convenience and excavations shall be conducted with appropriate safety requirements.

Pavement Design

These recommendations are based on our discussions with you, interpretation of the field and laboratory data, assumed traffic loading conditions, review of the provided documents, our experience with similar projects and utilization of the 1993 AASHTO Pavement Design Guidelines.

AIMRIGHT recommends that governing authorities (i.e., city, county, or other recognized officials) be contacted to discuss appropriate pavement section requirements with respect to this project. The project architect or engineer of record should design the final pavement section. We utilized the design parameters as illustrated below. It is our opinion the tabulated minimum sections overlying a properly prepared subgrade as outlined in this report may be utilized for construction.

Estimated 20-yr Traffic ESALs, Standard	25,000
Estimated 20-yr Traffic ESALs, Heavy Duty	50,000
Subgrade Resilient Modulus, M_r	3,000 psi
Modulus of Subgrade Reaction, K	100 psi/in
Concrete Modulus of Rupture, R	650 psi
Load Transfer Coefficient	3.2
Drainage Coefficient	1.0
Reliability	85%
Overall Standard Deviation, Asphalt	0.40
Overall Standard Deviation, Concrete	0.35
Serviceability, Initial, Asphalt	4.2
Serviceability, Initial, Concrete	4.5
Serviceability, Terminal	2.0
Layer Coefficient, Asphalt Wearing	0.44
Layer Coefficient, Asphalt Base	0.40
Layer Coefficient, Aggregate Base	0.14

	Depth (inches)	
Concrete Pavement Section	**Standard**	**Heavy Duty**
Concrete (≥ 4,000 psi, air-entrained)	4.0	6.0
ODOT Type A Aggregate Base	4.0	4.0

Asphalt Pavement Section	**Standard**	**Heavy Duty**
ODOT Type B (S4) or C (S5)	2.0	2.0
ODOT Type A (S3)	2.0	4.0
ODOT Type A Aggregate Base	8.0	8.0

Pavements should be constructed in accordance with Oklahoma Department of Transportation (ODOT) and city or county governing specifications and applicable American Concrete Institute (ACI) guidelines.

A minimum thickness of 7 inches of concrete and 6 inches of aggregate base should be provided in front of and beneath dumpster areas or any other areas subjected to continuous concentrated truck wheel loading.

Pavement Construction

The parking/drive areas generally consist of near surface conditions that are generally suitable for support of the anticipated loads. However, soft, wet surface, or other unsuitable conditions may be encountered within some areas of the footprint. Remediation of these soils shall be required during site preparation and earthwork while following the recommendations outlined in this report.

AIMRIGHT recommends conducting additional soil sampling and laboratory testing of the final soil subgrades upon completion of the grading activities to determine characteristics and stabilization requirements prior to beginning pavement construction.

Where soils with PI greater than 18 are encountered, to provide the parking/drive areas with a more stable subgrade, at minimum, the upper 8 inches of the final soil subgrade plus an additional 2 feet beyond the footprint be constructed with properly compacted engineered fill or native soils stabilized with a lime or other appropriate additive.

The actual amounts of additive should be determined in the field and the modification/stabilization procedure shall be performed and monitored in general accordance with current ODOT Standard Specifications for Highway Construction Section 307 Subgrade Treatment.

In general, long-term pavement performance requires good drainage, performance of periodic maintenance activities, and attention to subgrade preparation. We emphasize that good base course drainage is essential for successful pavement performance and should always be maintained in a drained condition. Consideration for proper drainage design should be carefully evaluated where unequal minimum pavement sections meet (i.e., light, or standard to heavy duty). Depending on drainage flow design, it may be necessary to deepen the aggregate base course for the thinner section requirement.

Water build-up in the base course could result in premature pavement failures. Sub-drains are typically utilized beneath a pavement where water may enter the pavement from below or above. Based on the results of the borings, we do not anticipate that sub-drains are required for this site. However, site drainage problems may be revealed during construction that requires sub-drains.

Proper drainage may be aided by grading the site such that surface water is directed away from pavements and by construction of swales adjacent to the pavements. All pavements should be graded such that surface water is directed towards the outer limits of the paved areas or to catch basins located such that surface water does not remain on the pavement.

Construction Monitoring

We recommend that all earthwork construction be monitored by an experienced engineering technician at AIMRIGHT. Monitoring should include site preparation, subgrade earthwork, engineered fill earthwork, structure foundation systems, conventional and/or structural slabs.

Monitoring will allow AIMRIGHT to confirm the soil conditions on site and evaluate the recommendations presented within this report. If at the time of construction, our recommendations are inappropriate for the project, monitoring will allow us to remediate the recommendations at that time to better serve the project.

Monitoring during construction will also allow for the testing of all construction materials for the project. This includes but is not limited to:

✓subgrade inspection and density testing,
✓structural area fill placement density testing,
✓foundation bearing grade observations and testing,
✓structural and reinforcing steel inspection,
✓concrete testing, and
✓asphaltic concrete testing, as applicable.

We recommend that AIMRIGHT be retained to provide these services based upon our current familiarity with the project subsurface conditions, and the provided intent of the geotechnical recommendations pertaining to the proposed development.

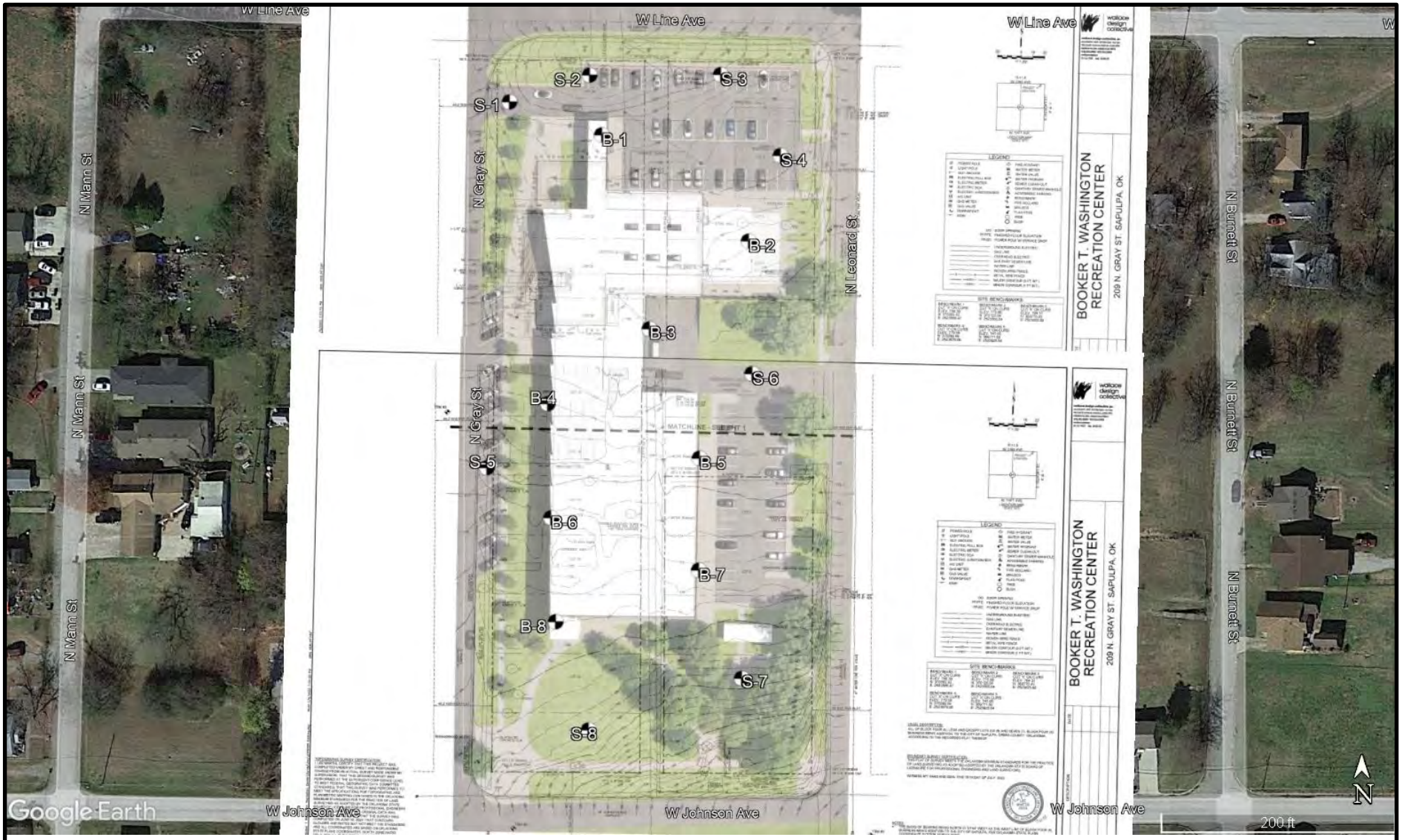
Limitations

The recommendations are based on our observations at the site, interpretation and analysis of the field and laboratory data obtained during this exploration, assumed loads, and our experience with previous exploration and testing with similar projects. Soil penetration data have been used to estimate an allowable bearing pressure and associated settlement using established correlations. Subsurface conditions in unexplored locations may vary from those encountered.

Determination of an appropriate foundation system for a given structure is dependent on the proposed structural loads, soil conditions, and construction constraints such as proximity to other structures, etc. The subsurface exploration aids the geotechnical engineer in determining the soil stratum appropriate for structural support. This determination includes considerations regarding both allowable bearing pressure and compressibility of the soil strata. In addition, since the method of construction greatly affects the soils intended for structural support, consideration must be given to the implementation of suitable methods of site preparation, fill compaction, and other aspects of construction.

The recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If our statements or assumptions concerning the location and design of this project contain incorrect information, or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project. In the event changes are made in the proposed design/construction plans, the recommendations presented in this report shall not be considered valid unless reviewed by AIMIRIGHT and modified or verified in writing.

Regardless of the thoroughness of the geotechnical exploration, there is always a possibility that subsurface conditions will be different from those at a specific boring location and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. The conclusions and recommendations presented in this report were derived in accordance with standard geotechnical engineering practices and no other warranty is expressed or implied.



APPROXIMATE BORING LOCATIONS

BORING LOCATION PLAN

PROJECT NO.: 15780324
SOURCE: Aerial Imagery/Provided Plan

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa

AIMRIGHT TESTING & ENGINEERING



APPROXIMATE BORING LOCATIONS

BORING LOCATION PLAN

PROJECT NO.: 15780324
SOURCE: Aerial Imagery

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa

AIMRIGHT TESTING & ENGINEERING

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-1

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches									
		0.167									
1		FAT CLAY w/ trace sand, sandstone fragments stiff, medium grayish brown, moist		CH	12		19.8	96.0	54	20	34
		1.5									
2		SHALE w/ sandstone fragments, highly weathered soft, light grayish brown, moist			50/2.75						
3											
4					50/5.75						
5											
6					50/5.5						
		Boring terminated at 6.458 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-2

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches (0.167)			11						
1		LEAN CLAY w/ trace sand, sandstone fragments stiff, dark brown, moist									
2		LEAN CLAY w/ SAND, trace sandstone, shale fragments very stiff to hard, medium and light grayish brown, moist		CL	15		17.4	76.8	29	15	14
3											
4					65						
5											
6		SANDSTONE w/ shale fragments, highly weathered (6) poorly cemented, medium brown, moist			50/2.25						
7											
8											
9					50/3.25						
10											
11											
12											
13					50/1.0						
		Boring terminated at 13.58 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-3

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches (0.167)									
1		LEAN CLAY w/ trace sand, sandstone fragments stiff, dark and medium brown, moist			9						
2		LEAN CLAY w/ SAND, trace sandstone, shale fragments hard, medium and light grayish brown, moist			33						
3		(3.5)									
4		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium brown and light grayish brown, moist			50/5.5						
5											
6					50/5.75						
7											
8					50/5.75						
		Boring terminated at 8.979 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-4

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: ▽ Dry **AT COMPLETION:** ▼ Dry **CAVING>** ℄ None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		LEAN CLAY w/ trace sand, sandstone fragments stiff, medium grayish brown, moist			12						
1											
2		LEAN CLAY w/ trace sand, sandstone, shale fragments very stiff, medium and light grayish brown, moist		CL	19		16.1	88.0	29	15	14
3											
3.5											
4		SHALE w/ sandstone fragments, highly weathered soft, medium and light grayish brown, moist			50/4.25						
5											
6					50/3.25						
7											
8											
					50/5.5						
		Boring terminated at 8.958 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-5

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 3 inches									
		0.25									
1		LEAN CLAY w/ SAND, trace sandstone fragments medium stiff, dark brown, moist		CL	6		21.5	75.4	36	18	18
2		LEAN CLAY w/ trace sand, sandstone, fragments hard, medium brown, moist			58						
3											
		3.5									
4		SHALE w/ sandstone fragments, highly weathered soft, medium brown and light grayish brown, moist			50/5.75						
5											
6					50/1.75						
7											
8											
					50/5.75						
		Boring terminated at 8.979 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-6

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 3 inches									
		0.25									
1		LEAN CLAY w/ SAND medium stiff, dark brown, moist			6						
2		LEAN CLAY w/ trace sand, sandstone, shale fragments hard, medium and light grayish brown, moist			40						
3											
		3.5									
4		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium and light grayish brown, moist			50/5.75						
5											
6					50/5.0						
7											
8											
					50/2.0						
		Boring terminated at 8.667 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-7

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches (0.167)									
1		LEAN CLAY w/ SAND, sandstone fragments medium stiff, dark and medium brown, moist			5						
2		SANDSTONE w/ shale fragments, highly weathered poorly cemeented, medium reddish brown, moist (1.5)			50/5.25						
3											
4		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium and light grayish brown, moist			50/5.5						
5											
6					50/5.75						
7											
8											
9					50/5.25						
		Boring terminated at 9.438 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING B-8

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches									
		0.167			7						
1		LEAN CLAY w/ SAND, sandstone fragments stiff, dark and medium brown, moist									
2		SANDY LEAN CLAY w/ trace sandstone, shale fragments hard, light grayish brown, moist		CL	64		13.4	63.1	24	15	9
3											
		3.5									
4		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium and light grayish brown, moist			50/0.5						
5											
6					50/5.75						
7											
8											
9					50/3.25						
10											
11					50/0.5						
		Auger refusal encountered at 11 ft. Boring terminated at 11.04 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-1

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches									
0.167		LEAN to FAT CLAY w/ SAND, sandstone, shale fragments medium stiff, medium grayish brown, moist		CL-CH	5		20.4	95.4	49	18	31
1											
1.5		LEAN CLAY w/ SAND, shale fragments hard, medium and light grayish brown, moist			64						
2											
3											
3.5		SHALE w/ sandstone fragments, highly weathered soft, medium and light grayish brown, moist			50/5.5						
4											
5											
6		LEAN CLAY w/ shale, sandstone fragments hard, medium grayish brown, moist			72						
7											
8											
8.5		SHALE highly weathered soft, medium grayish brown, moist			50/5.5						
		Boring terminated at 8.958 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-2

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches									
		0.167			7						
1		LEAN CLAY w/ trace sand stiff, medium reddish brown, moist									
		1.5		CH	24		18.1	89.3	54	20	34
2		FAT CLAY w/ trace sand, sandstone, shale fragments very stiff, medium and light grayish brown, moist									
3											
		3.5			34						
4		LEAN CLAY w/ trace sand, sandstone, shale fragments hard, light grayish brown, moist									
5											
6		6			50/5.0						
		SHALE w/ sandstone fragments, highly weathered soft, medium and light grayish brown, moist									
7											
8											
					50/3.0						
		Boring terminated at 8.75 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-3

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches									
		0.167			7						
1		LEAN CLAY w/ trace sand stiff, dark brown, moist									
		1.5		CH	6		24.1	89.9	56	18	38
2		FAT CLAY w/ trace sand medium stiff, medium and dark grayish brown, moist									
3											
		3.5			18						
4		LEAN CLAY w/ trace sand, sandstone, shale fragments very stiff, medium grayish brown, moist									
5											
6		6			50/3.0						
		SHALE highly weathered soft, medium grayish brown, moist									
7											
8											
9					50/5.5						
		Boring terminated at 9.458 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-4

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		CONCRETE - 4 inches									
0		LEAN CLAY w/ trace sand medium stiff, dark grayish brown, moist			5						
1											
2		LEAN CLAY w/ SAND, trace sandstone, shale fragments stiff, medium grayish brown, moist		CL	9		24.7	74.3	39	17	22
3											
3.5		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium grayish brown, moist			50/3.5						
4											
5											
6		SHALE w/ sandstone fragments, highly weathered soft, medium and light grayish brown, moist			50/5.0						
7											
8											
					50/5.75						
		Boring terminated at 8.979 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-5

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 3 inches									
		0.25									
1		LEAN CLAY w/ trace sand stiff, dark brown, moist			7						
2		LEAN CLAY w/ trace sand, sandstone, shale fragments stiff, medium grayish brown, moist			9						
3											
		3.5									
4		SHALE w/ sandstone fragments, highly weathered soft, medium grayish brown, moist			26 50/5.75						
5											
6					50/2.5						
7											
8											
					50/2.5						
		Boring terminated at 8.708 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-6

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 3 inches									
		0.25			4						
1		LEAN CLAY w/ trace sand medium stiff, dark brown, moist									
		LEAN CLAY w/ trace sand, sandstone, shale fragments very hard, medium brown, moist			83						
3		3.5									
		SHALE w/ sandstone fragments, highly weathered soft, medium grayish brown, moist			38 50/5.75						
6					50/1.5						
		Auger refusal encountered at 6.125 ft. Boring terminated at 6.125 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-7

PROJECT: Booker T. Washington Recreation Center
CLIENT: City of Sapulpa **PROJECT NO.:** 15780324
PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066
LOCATION: see Boring Location Plan **ELEVATION:** N/A
DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV
DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24
DEPTH TO WATER> INITIAL: Dry **AT COMPLETION:** Dry **CAVING>** None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 2 inches (0.167)									
1		SANDY LEAN CLAY w/ trace sandstone fragments stiff, dark brown, moist		CL	9		15.1	50.6	28	18	10
2		LEAN CLAY w/ trace sand, sandstone, shale fragments very stiff, medium reddish brown mottled light gray, moist			13						
3											
4		LEAN CLAY w/ trace sand, sandstone, shale fragments hard, light reddish brown, moist			44						
5											
6		SHALE w/ sandstone fragments, highly weathered (6) soft, light grayish brown, moist			32 50/5.25						
7											
8											
9					45 50/4.0						
		Boring terminated at 9.833 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

AIMRIGHT TESTING & ENGINEERING

LOG OF BORING S-8

PROJECT: Booker T. Washington Recreation Center

CLIENT: City of Sapulpa **PROJECT NO.:** 15780324

PROJECT LOCATION: 209 N Gray St, Sapulpa, OK 74066

LOCATION: see Boring Location Plan **ELEVATION:** N/A

DRILLER: R. Melton **LOGGED BY:** C. Hale **DRILLING RIG:** D-50 ATV

DRILLING METHOD: Rotary Continuous Flight Augers **DATE:** 3/29/24

DEPTH TO WATER> INITIAL: ▽ Dry **AT COMPLETION:** ▼ Dry **CAVING>** ℄ None

Depth (feet)	Sampler Type	Description	Graphic	USCS Symbol	SPT N-value (bpf)	Groundwater	Moisture Content	% < #200	Liquid Limit	Plastic Limit	Plasticity Index
0		TOPSOIL - 4 inches									
		0.333									
1		SANDY LEAN CLAY w/ trace sandstone fragments very stiff, medium brown, moist			20						
2		LEAN CLAY w/ trace sand, sandstone, fragments hard, medium grayish brown, moist			32						
3											
4		LEAN CLAY w/ trace sand, sandstone, shale fragments hard, light grayish brown, moist			52						
5											
6		6			50/3.75						
		SANDSTONE w/ shale fragments, highly weathered poorly cemented, medium and light grayish brown, moist									
7											
8											
		8.5									
9		LEAN CLAY w/ SAND, sandstone, shale fragments very hard, medium and light grayish brown, moist			91						
10											
		Boring terminated at 10 ft.									

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

KEY TO SYMBOLS

Symbol **Description**

Strata Symbols



Topsoil



High Plasticity Clay



Shale



Low Plasticity Clay



Sandstone



Low to High Plasticity Clays



Existing Pavement Section

Misc. Symbols



Auger Refusal

Soil Samplers



Standard Penetration Test



Auger

Stormwater Pollution Prevention Plan (SWP3)

Authorization No. OKR10#####

For Construction Activities At:

Booker T. Washington Recreation Center
209 N Gray Street
Sapulpa, OK 74066

SWP3 Prepared For:

City of Sapulpa
Michael Russell
425 E Dewey Avenue
Sapulpa, Oklahoma 74066
918.248.5934

SWP3 Prepared By:

Wallace Design Collective, PC
Scott Rodehaver, P.E.
123 N Martin Luther King Jr Boulevard
Tulsa, Oklahoma 74103
918.584.5858

SWP3 Preparation Date:

9 / 19 / 2025

Estimated Project Dates:

Project Start Date: 11 / 17 / 2025

Project Completion Date: 11 / 30 / 2026

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Section 1: Stormwater Team and Project/Site Information

1.1 Stormwater Team

Stormwater team members/operators are responsible for overseeing development of the SWP3, making any modifications to it, implementing and maintaining control measures, taking corrective actions when required, performing site inspection and monitoring, supervising pollution prevention and waste management activities, providing staff training, and communicating changes in the SWP3 to the people working on the site. The following personnel, along with their role and responsibility, will be part of the **stormwater team** for my construction site:

Team Lead #1 Primary Operator	**Roles & Responsibilities**
Name: Michael Russell	Ensure compliance with OKR10 Oversee changes to SP3 dates, logs, and contacts Communicate changes
Title: Owner's Representative – City of Sapulpa	
Phone #: 918.248.5934	

Team Lead #2 Secondary Operator	**Roles & Responsibilities**
Name:	
Title:	
Phone #:	

Team Lead #3 (specify in Title)	**Roles & Responsibilities**
Name: TBD	
Title: Construction Manager	
Phone #:	

Team Member #4 (specify in Title)	**Roles & Responsibilities**
Name: Scott Rodehaver, P.E.	Prepare Preliminary SP3
Title: Principal	
Phone #: 918.584.5858	

1.2 Nature of Construction Activity and Project Information

Project/Site Name and Address	
Project/Site Name: Booker T. Washington Recreation Center	
Project/Site Street/Location: 209 N Gray Street	
City: Sapulpa	**County**: Creek
State: Oklahoma	**ZIP Code**: 74066

General Description of the Project/Site: Expansion of an existing recreation center.

Estimated project start date: 11/17/2025	
Estimated project end date: 11/30/2026	
Total area of the construction site: 4.3	**(acres)**
Estimated area to be disturbed: 3.08	**(acres)**
Estimated current impervious area at the site: 0.94	**(acres)**
Estimated impervious area after construction: 1.61	**(acres)**
Pre-construction runoff coefficient of the site: 0.47	
Post-construction runoff coefficient of the site: 0.56	
Purpose of the Construction Project/Site: ☐ Residential ☒ Commercial ☐ Wind Farm ☐ Road/Bridge ☐ Other(s), please specify: Click here to enter text.	

Project Latitude/Longitude **(**Physical entrance **OR** for linear project, include latitude/longitude of **start and end points)**	
Latitude:	**Longitude:**
1. _ _ ° _ _ ' _ _._ _ '' N (degrees, minutes, seconds)	1. _ _ ° _ _ ' _ _._ _ '' W (degrees, minutes, seconds)
2. 36. 00 09 ° N (decimal)	2. 96. 07 21 ° W (decimal)
Latitude:	**Longitude:**
1. _ _ ° _ _ ' _ _._ _ '' N (degrees, minutes, seconds)	1. _ _ ° _ _ ' _ _._ _ '' W (degrees, minutes, seconds)
2. _ _ . _ _ _ _ ° N (decimal)	2. _ _ . _ _ _ _ ° W (decimal)
Method for determining latitude/longitude:	
☐ DEQ Flex-viewer ☐ EPA Website ☒ Google Earth / Maps ☐ GPS	

Description of soil type(s) and fill materials: The site consists of organic laden soils sampled as silty sand/sandy silt with organics and root matter; existing pavement section. Medium stiff to very hard lean, lean-to-fat, fat clay with varying amounts of clay, silt, sand, and rock fragments. Highly weathered, poorly cemented sandstone and soft shale.

Description of slopes (describe existing slopes and note any changes due to grading or fill activities):
The site is generally level and sloping downwards from the north to the south with elevation changes of 794 ft to 745 ft, respectively.

Description of drainage patterns (describe existing drainage patterns and note any changes dues to grading or fill activities): The site naturally drains from the north to the south.

Description of existing or baseline vegetation on or immediately surrounding the project area:
The site is developed with existing structures, pavements, sidewalks, above/below-grade infrastructure. Surrounded by mostly grass covered areas with trees/shrubbery.

Climate/Rainfall Patterns - check the box that applies:

☐ (0-20" annual rainfall) ☐ (20" -30" annual rainfall)

☐ (30"-40" annual rainfall) ☒ (40" -50" annual rainfall)

*(**Note:** Annual rainfall data can be found at the following link: https://www.mesonet.org/index.php/weather/category/rainfall)*

1.3 Operators and Contactor's Contact Information

Operator(s) Information:		
Name: City of Sapulpa		
Address: 125 Dewey Avenue		
City: Sapulpa	State: OK	Zip Code: 74066
Operator's Point of Contact: Michael Russell		
Telephone Number: 918.248.5934		
Email address: mrussell@sapaulpa.gov	Fax number:	

(Repeat for multiple operators by copying and pasting the above rows)

Contractor's Information:		
Name: TBD		
Address:		
City:	State:	Zip Code:
Telephone Number:		
Email address:	Fax number:	

(If owner is a separate entity)

Sub-Contractor's Information:		
Name:		
Address:		
City:	State:	Zip Code:
Telephone Number:		
Email address:	Fax number:	

(If owner is a separate entity)

SWP3 Contact(s):	
SWP3 Contact Name (Primary): TBD	
Telephone number:	
Email address:	Fax number:
SWP3 Contact Name (Secondary): Scott Rodehaver, P.E.	
Telephone number: 918.584.5858	
Email address: scott.rodehaver@wallace.design	Fax number:

1.4 Construction Support Activities (*if applicable*)

List of construction support activities that will be present at the construction project/site:

*(**Note-1: Locate** all the construction support activities on the site map (included in Section 2.2 in SWP3 template). **Appropriate/additional** controls & measures are required for construction support activities. Support activities should not be located within the watershed of an Outstanding Resource Water (ORW). See Addendum B of permit for ORW areas.*

***Note-2:** Include **Section 8** if you have Concrete Batch Plant and/or Asphalt Plant as construction support activities at your construction site. Exclude/delete Section 8 if you don't have Concrete Batch Plant and/or Asphalt Plant at your construction site.)*

Type of Construction Support Activities [1]	Will be Present at the Construction Site?
Equipment Staging Yards	☒ Yes ☐ No
Material Storage Areas	☒ Yes ☐ No
Excavated Material Disposal Areas	☐ Yes ☒ No
Borrow Areas	☐ Yes ☒ No
Concrete Batch Plant [2]	☐ Yes ☒ No
Asphalt Plant [2]	☐ Yes ☒ No

1.5 Sequence of Construction Activities

*(**Note:** You may edit sequence of construction activities in the following table to reflect your project's sequences along with estimated start date and duration. Make sure to update for all locations/operators involved.)*

Installation and removal of Stormwater Control Measures may be phased along with construction. For example, if the western half of a project is not being disturbed in the first phase of construction, the western perimeter silt fence may not be needed until just prior to disturbance.

No.	Sequence of Construction Activities	Estimated Start Date	Duration (in Days)
1.	Construction access/entrance to site, construction routes, areas designated for equipment parking/staging area	**11/17/2025**	**07**
2.	Silt fences, berm or similar control measures as perimeter control	**11/17/2025**	**07**
3.	Land clearing and grading, site preparation (cutting, filling, and grading, sediment traps, barriers, diversions, drains, surface roughening)	**11/24/2025**	**22**
4.	Runoff control diversions, perimeter dikes, water bars, outlet protection	**12/16/2025**	**30**
5.	Inlet/outlet protection, sediment traps and/or sediment basin	**12/16/2025**	**30**
6.	Runoff conveyance system, stabilize stream banks, storm drains, channels, inlet and outlet protection, slope drains	**01/15/2026**	**270**
7.	Surface stabilization - temporary and permanent hydraulic mulching, hydroseeding, straw mulch, sodding, riprap	**01/15/2026**	**270**
8.	Building construction - buildings, utilities, paving etc.	**01/15/2026**	**270**
9.	Landscaping and final stabilization, top-soiling, trees and shrubs, permanent seeding, mulching, sodding, riprap	**10/12/2026**	**49**
10.	Removal of all structural controls where applicable	**11/30/2026**	**01**

1.6 Allowable Non-Stormwater Discharges

List of allowable non-stormwater discharges that will be present at the construction site:

*(**Note:** You are required to identify the likely locations of these allowable non-stormwater discharges on your **site maps**.)*

No.	Type of Allowable Non-Stormwater Discharge	Likely to be Present at Construction Site?
1.	Fire hydrant flushing	☒ Yes ☐ No
2.	Waters used to wash vehicles and equipment	☒ Yes ☐ No
3.	Water used to control dust	☒ Yes ☐ No
4.	Potable water including uncontaminated water line flushing	☒ Yes ☐ No
5.	Routine external building wash down	☐ Yes ☒ No
6.	Pavement washing waters	☒ Yes ☐ No
7.	Uncontaminated air conditioning or compressor condensate	☒ Yes ☐ No
8.	Uncontaminated, non-turbid discharges of ground water or spring water	☒ Yes ☐ No
9.	Foundation or footing drains	☐ Yes ☒ No
10.	Landscape Irrigation	☒ Yes ☐ No
11.	Discharges from emergency fire-fighting activities	☒ Yes ☐ No
12.	Uncontaminated construction dewatering water	☐ Yes ☒ No

Section 2: Site Description and Site Map

2.1 Receiving Waters/Discharge Information

Receiving Water body's Information: Stormwater discharges from this construction project will flow to the following receiving water body(ies).

No.	Name of the Receiving Waters	Is this surface water listed as impaired?	Cause of Impairment [1]	Has a TMDL [2] been completed?	TMDL Pollutant(s)
1.	Euchee Creek	☐ Yes ☒ No		☐ Yes ☒ No	
2.	Rock Creek	☒ Yes ☐ No	Benthic Macro.	☐ Yes ☒ No	
3.		☐ Yes ☐ No		☐ Yes ☐ No	
4.		☐ Yes ☐ No		☐ Yes ☐ No	

*(**Note:** Name of the receiving waters can be found at the DEQ website using the following link: https://gis.deq.ok.gov/maps. Cause of impairment and TMDL information can be found at the DEQ website using the following link: https://www.deq.ok.gov/water-quality-division/watershed-planning/integrated-report/)*

[1] *If you discharge to an impaired water that is impaired for **Sediment and/or Turbidity and located within 1 mile** (as described in Part 3.4 of OKR10 permit), you are required to comply with the additional requirements in Part 4.6.B of OKR10 permit.*

[2] *Total Maximum Daily Load (TMDL)*

Does the project/site discharge stormwater to an **Aquatic Resource of Concern (ARC)** or an **Outstanding Resource Water (ORW)**?

☐ Yes ☒ No, If yes, I must comply with specific buffer requirements (*see Table 4-1 and Part 4.6.B of OKR10 permit*) and stabilization deadline requirements (*see Parts 4.3.A and 4.6.B of OKR10 permit*).

*(**Note:** ARC maps can be found at the following link: https://www.deq.ok.gov/wp-content/uploads/water-division/OKR10-Sensative-Area.png ORW maps can be found in Addendum B of OKR10 permit)*

Does the project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?

☒ Yes ☐ No

If yes, what is the name of the MS4 operator? City of Sapulpa

***Note:** See Table C.7 in the MS4 Permit Factsheet, link: https://www.deq.ok.gov/wp-content/uploads/water-division/2021_OKR04_Factsheet.pdf .*

2.2 General Location Map

Provide a general location map (e.g., DEQ GIS Data Viewer or U.S. Geological Survey (USGS), link: https://gis.deq.ok.gov/maps/, quadrangle map or aerial image from the internet) with enough detail to identify the location of your facility and all receiving waters for your stormwater discharges within one mile of the construction site (*see Part 5.3.F of the OKR10 permit*).

☒ A **general location map** is included in **Attachment A** of this SWP3.

2.3 Site Map

SWP3 includes a legible site map or series of site maps/erosion and sediment control plans showing all the features (*see also Part 5.3.F of OKR10 permit*) listed below:

- Pre-construction topographic view including vegetation, showing the location of
  - ✓ all surface water bodies within one mile of the site (including wetlands); and
  - ✓ direction of stormwater flow across the construction site (i.e., use arrows to show which direction stormwater will flow);
- Boundaries of property and identify the location(s) of:
  - ✓ Earth-disturbing activities;
  - ✓ boundary lines of any natural buffers;
  - ✓ approximate slopes before and after major grading activities,
  - ✓ areas of steep slopes, surface water crossings, Structures and other impervious surfaces upon completion of construction
- Locations of all structural and nonstructural controls/BMPs identified in the plan including showing the location of:
  - ✓ construction entrance/exit,
  - ✓ concrete wash-out area,
  - ✓ construction support activity areas such as locations of off-site materials, waste, borrow area, or equipment storage area;
  - ✓ stockpiled materials (sediment, topsoil, etc.), and
  - ✓ locations of all potential pollutant-generating activities;
- Locations where stormwater and allowable non-stormwater will be discharged off-site (should be continuously updated); sampling locations if project is subject to numeric limitations due to presence of an asphalt batch plant;
- Location where stabilization practices are expected to occur; Areas where final stabilization will be accomplished and no further construction phase permit requirements apply.

☒ The **site map or series of maps** for this facility can be found in **Attachment B** of this SWP3 showing all the above-mentioned features in Part 2.3 of this SWP3.

Section 3: Construction Site Pollutants

3.1 Pollutant-Generating Activities

Potential sources of sediment to stormwater runoff:

Clearing and grubbing operations, grading and site excavation operations, vehicle tracking, topsoil stripping and stockpiling, landscaping operations

Potential sources of pollutants, other than sediment, to stormwater runoff:

- Combined Staging Area - small fueling activities, minor equipment maintenance, sanitary facilities, and hazardous waste storage.
- Materials Storage Area - general building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.
- Construction Activity - paving, curb/gutter installation, concrete pouring/mortar/stucco, and building construction
- Concrete Washout Area

3.2 List of Potential Pollutants

List of Pollutants that can be present at the construction site:

*(**Note:** Check all the boxes applicable to your project site; include additional pollutants, if necessary, in the space below)*

Check	Materials/ Chemicals	Stormwater Pollutants	Location at the Site
☒	Dirt from land disturbed area	Sediment	General Site
☒	Pesticides (insecticides, fungicides, herbicides, rodenticides)	Chlorinated hydrocarbons, organophosphates, carbonates, arsenic	Planters and Trees
☒	Fertilizer and dirt/soil	Nitrogen, phosphorous	Sod, Planters and Trees
☒	Plaster	Calcium sulphate, calcium carbonate, sulfuric acid	Building Construction
☒	Cleaning solvents	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	Building Construction
☒	Asphalt	Oil, petroleum distillates	Parking Lot
☒	Concrete	Limestone, sand, pH, chromium	Curbs and Sidewalks
☒	Glue, adhesives	Polymers, epoxies	Building Construction
☒	Paints	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic, methanol, titanium dioxide, oxygenated hydrocarbon	Building Construction
☒	Curing compounds	Naphtha	Building Construction
☒	Wood preservatives	Stoddard solvent, petroleum distillates, arsenic, copper, chromium	Building Construction
☒	Hydraulic oil/fluids	Mineral oil	General Site
☒	Gasoline	Benzene, ethyl benzene, toluene, xylene, MTBE	General Site
☒	Diesel Fuel	Petroleum distillate, oil & grease, naphthalene, xylenes	General Site
☒	Antifreeze/coolant	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	General Site
☒	Sanitary toilets	Bacteria, parasites, and viruses	Portable Facilities
☐			

Section 4: Compliance with Federal and State Requirements

4.1 Endangered or Threatened Species Protection

Eligibility Criterion

Under which criterion listed in NOI is the construction project/site eligible for coverage under the OKR10 permit?

*(**Note:** ARC maps can be found at the following link: https://www.deq.ok.gov/wp-content/uploads/water-division/OKR10-Sensative-Area.png*

☒ **A** ☐ **B** ☐ **C** ☐ **D** ☐ **E**

For reference purposes, the eligibility criteria listed in Part 2.5.B.3 of OKR10 permit are as follows:

Criterion A. Criterion A requires that proposed construction site or land disturbing activity is not located within any of the corridors of the federal or state identified aquatic resource of concern ("ARC"), and further investigation is not required.

Criterion B. Criterion B requires that the proposed construction site or land disturbing activity is located within a corridor of a federal or state identified ARC. Operators must provide and implement measures to protect the endangered or threatened species or their critical habitat; these measures must be identified in the NOI and described in the facility's SWP3.

Criterion C. Criterion C requires that the applicant use Addendum D to evaluate alternatives of buffer requirements and select equivalent sediment controls or contact DEQ for further consultation if one of those eligibility criteria under Part 2.5.B.3.b, d, ore cannot be met.

Criterion D. Criterion D requires that the applicant's federally approved construction activities are authorized by the appropriate federal or state agency and that authorization addresses the Endangered Species Act Section 7 consultation for the storm water discharge or storm water discharge-related activities. Applicants selecting option d must include documentation from U.S. Fish and Wildlife Service ("USFWS") or a qualified biologist that demonstrates Section 7 consultation has been completed. The SWP3 must comply with and be updated to include any conditions resulting from that consultation.

Criterion E. Criterion E requires that the applicant's storm water discharges and storm water discharge-related activities are already addressed in another operator's certification of eligibility that includes the applicant's project area. By certifying eligibility under this part, the applicant agrees to comply with applicable measures or controls upon which the other operator's certification was based.

Note: For Criterion B, C, D, or E, you may subject to comply with additional requirements.

4.2 Federal, State, or Local Historic Preservation Laws

Will stormwater discharges or stormwater discharge-related activities (e.g., catch basin, pond, culver, etc.) affect a property that is protected by Federal, State, or local historic preservation laws? ☐ Yes ☒ No

If yes, describe any actions taken to mitigate those effects: Click here to enter text.

Describe how this determination was made: Click here to enter text.

4.3 TMDL Requirements

If a TMDL or watershed plan or local compliance plan has been approved for the waterbody, SWP3 must include all the applicable requirements in consistent with the TMDL or watershed plan or local compliance plan that are applicable to the stormwater discharges from the construction site.

Does the construction project/site discharge stormwater into a receiving stream that has an approved TMDL or watershed plan or local compliance plan?

☐ Yes ☒ No

If yes, is there any waste load allocations (WLAs) and/or the TMDL's associated implementation plan requirements applicable to stormwater discharges from the construction activity?

☐ Yes ☐ No

If yes, SWP3 must incorporate any limitations, conditions, or requirements applicable to permittee's discharges to ensure that the waste load allocations (WLAs) and/or the TMDL's associated implementation plan will be met within any timeframe established in the TMDL report or watershed plan. Monitoring and reporting of the discharges may also be required as appropriate to ensure compliance with the TMDL or watershed plan.

Note: *Approved TMDL reports or watershed plans can be downloaded from DEQ's website at* https://www.deq.ok.gov/water-quality-division/watershed-planning/tmdl/completed-tmdls/.

Does the construction project/site discharge stormwater to the **Lake Thunderbird watershed**?

☐ Yes ☒ No

If yes, the following control measures will be used to meet the Lake Thunderbird TMDL requirements:

- ☐ **Additional Pollutant Prevention or Discharge Monitoring** - You must comply with any additional requirements established by the local MS4 municipalities;
- ☐ **Sites of Five Acres or Larger** - You must submit a copy of SWP3 to DEQ for review;
- ☐ **Vegetated Buffer** - You must ensure that a vegetated buffer of at least 100 feet is retained or successfully established or planted between the area disturbed and all receiving streams. If the nature of the construction activity or the construction site makes a buffer impossible, you must provide equivalent controls. There are exceptions from this requirement for water crossings, limited water access, and stream restoration authorized under a CWA Section 404 permit;
- ☐ **Sediment Basins** - For all drainage locations serving 5 or more acres disturbed at one time, you must use a temporary or permanent sediment basin and/or sediment traps to minimize sediment discharges;
- ☐ **Site Inspection** - You must conduct site inspections once every 7 calendar days at a minimum, and within 24 hours of a storm event of 0.5 inches or greater and within 24 hours of a discharge caused by snowmelt;
- ☐ **Corrective Actions** - You must implement corrective actions (e.g., repair, modify, or replace any stormwater control used at the site, clean up and dispose of spills, releases, or other deposits, or remedy a permit violation) by no later than 7 calendar days from the time of discovery. If it is infeasible to complete the installation or repair within 7 calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7 calendar days timeframe and document your schedule for installing the stormwater controls and making them operational as soon as practicable after the 7 days timeframe;
- ☐ **Stabilization** - You must initiate stabilization measures immediately whenever earth-disturbing activities have permanently or temporary ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. You are required to complete the stabilization activities within 7 calendar days after the permanent or temporary cessation;
- ☐ **Soil Nutrient Testing** - You are required to conduct a soil nutrient test to determine actual nutrient needs before applying fertilizer on your site. Fertilizer application must be limited to that necessary to meet actual needs on the site.
- ☐ Describe any additional measures or controls you will implement to comply with the Lake Thunderbird TMDL requirements: Click here to enter text.

Section 5: Stormwater Control Measures

The purpose of the implementation of different stormwater pollution controls is to reduce pollutants in the stormwater and the volume of stormwater leaving the construction site. All pollution control measures will be selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices.

5.1 Stabilization Practices

Type of Site Stabilization Practice(s) that will be implementing at the construction project/site (select all that apply):

☒ Temporary ☒ Permanent ☒ Vegetative ☐ Non-Vegetative

Deadline to Initiate Stabilization: I shall initiate stabilization measures **immediately** whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period of 14 or more calendar days.

Deadline to Complete Stabilization:

☒ I shall complete stabilization measures **as soon as practicable** but no later than 14 calendar days after the initiation of soil stabilization.

☐ My project/site is located in ARC/discharge to ORW; I shall complete stabilization measures **as soon as practicable** but no later than 7 calendar days after the initiation of soil stabilization.
*(**Note:** ARC maps can be found at the following link:*
https://www.deq.ok.gov/wp-content/uploads/water-division/OKR10-Sensative-Area.png
ORW maps can be found in Addendum B of OKR10 permit)

Temporary Non-Vegetative Stabilization: The following **non-vegetative** controls/BMPs will be used to temporarily stabilize exposed portions of the construction site (*select all that apply*):

☐ **Rolled erosion control products such as geotextiles, blankets or plastic cover** ☐ **Soil binders**

☐ **Straw mulch** ☐ **Wood mulch** ☐ **Compost Blanket** ☐ **Other, _____**

If any of the above-referenced controls is used to temporarily protect areas that are being vegetative stabilized, one of the effective non-vegetative cover will be used to stabilize any such exposed portions of our site.

Temporary Vegetative Stabilization: The following **vegetative** controls will be used to temporarily stabilize the exposed portions of the construction site (*select all that apply*):

☒ **Hydroseeding with mulch** ☐ **Sod** ☐ **Other, _____**

Permanent Vegetative Stabilization: The following **vegetative** controls will be used to permanently stabilize the exposed portions of the construction site (*select all that apply*):

☐ **Hydroseeding with mulch** ☒ **Sod** ☐ **Planted vegetation** ☐ **Other, _____**

One of the following criteria will be used for vegetative cover:

- Provide a vegetative cover which covers 70% or more of the vegetation prior to commencing earth-disturbing activities and no large bare areas (10 square feet).
- Immediately after seeding, you must select, design, and install non-vegetative erosion controls that provide cover (such as ***straw mulch, jute matting, and straw blankets***) to the area while vegetation is being established.

Stabilization Practices Record: A record of the dates when grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included with the plan. ☒ Yes ☐ No

If No, explain: _____

A record of the dates when grading activities occur will be documented using the Grading & Stabilization Activity logs in **Attachment-I** of this SWP3.

5.2 Natural Buffers and/or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any **waters of the State** that are located within 50 feet (or 100 feet if the construction site is a high priority construction site (*see Part 3.4 of OKR10 permit*) or located in Lake Thunderbird Watershed) of your construction disturbances as measured from the top of the bank to the disturbed portions of your site?

☐ Yes ☒ No

*(**Note:** Waters of the State means all named/unnamed stream, creeks, rivers, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, storm sewers and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private located within the boundary of Oklahoma State.)*

If Yes, check the compliance alternative that you have chosen:

☐ I will provide and maintain a 50 feet (or **100 feet** if the construction site is a high priority construction site or located in Lake Thunderbird Watershed) undisturbed natural buffer.

*(**Note 1:** See Table 4-1 of OKR10 permit for exceptions to above buffer requirements.)*

*(**Note 2:** You must show the boundary line of the natural buffer on your site map.)*

*(**Note 3:** You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls.)*

☐ I will provide and maintain an undisturbed natural buffer that is less than 50 feet (or **100 feet** if the construction site is located in ARC or ORW or Lake Thunderbird Watershed) and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to required undisturbed natural buffer.

*(**Note 1:** See Table 4-1 of OKR10 permit for exceptions to above buffer requirements.)*

*(**Note 2:** You must show the boundary line of the natural buffer on your site map.)*

*(**Note 3:** You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls.)*

i. Width of natural buffer to be retained: _____

ii. Method used to determine equivalent sediment load reduction:

☐ Addendum-I: Buffer Guidance in OKR10 permit

a. Soil Type: _____

b. Buffer Vegetation: _____

OR

☐ Site-specific calculation

a. Model or other tool used to estimate sediment load reductions:

_____

b. Results of calculations: _____

_____

c. Description of additional erosion and sediment controls used:

_____

_____

☐ It is infeasible to provide and maintain an undisturbed natural buffer of any size; therefore, I will implement erosion and sediment controls that will achieve the sediment load reduction equivalent to a 50 feet (or 100 feet if the construction site is located in ARC or ORW or Lake Thunderbird Watershed) undisturbed natural buffer.

i. Rationale for concluding that it is infeasible to provide and maintain a natural buffer of any size:

_____

_____

ii. Method used to determine equivalent sediment load reduction:

☐ Addendum-I: Buffer Guidance in OKR10 permit

a. Soil Type: _____

b. Buffer Vegetation: _____

OR

☐ Site-specific calculation

a. Model or other tool used to estimate sediment load reductions:

_____

b. Results of calculations: _____

_____

c. Description of additional erosion and sediment controls used:

_____

☐ I qualify for one of the following exceptions (*select one that applies to your project/site*):

☐ There is no discharge of stormwater to the surface water that is located 50 feet from my construction disturbances.

☐ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.

☐ Buffer disturbances are authorized under a CWA Section 404 permit.

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).

5.3 Structural Controls/Best Management Practices (BMPs)

The table below listed Structural and Non-Structural Stormwater Controls/Best Management Practices (BMPs) that should be considered for every construction project/site to meet **the non-numeric technology-based effluent limitations, water-based effluent limitations and applicable numeric technology-based effluent limitations.**

The following BMPs will be used or implemented at the construction project/site (*select all that apply*):

Erosion Controls		Sediment Controls	
☒	Preservation of Existing Vegetation	☒	Silt Fence
☐	Vegetative Swales	☐	Silt Dikes
☒	Hydroseeding with Mulch	☐	Compost Sock
☐	Hydraulic Mulch	☐	Check Dam
☐	Wood Mulching	☐	Fiber Rolls
☐	Straw Mulching	☒	Storm Drain Inlet Protection
☐	Compost Blankets	☐	Outlet Protection/Velocity Dissipation Devices
☐	Soil Binders	☐	Earth Berms and Drainage Swales
☐	Geotextiles and Mats	☐	Sand Bag Barrier
☐	Soil Preparation/Roughening	☐	Gravel Bag Berm/Barrier
☒	Sod	☐	Sediment Basin
☐	Streambank Stabilization	☐	Sediment Trap
Tracking Controls		☐	Rip-rap
☐	Stabilized Construction Entrance/Exit	☐	Gabions
☐	Stabilized Construction Roadway	**Non-Structural Controls**	
☐	Entrance/Exit Tire Wash	☐	Phasing and Scheduling
☒	Street Sweeping and Vacuuming	☒	Dust Suppression
Other Structural Controls		☐	Fertilizer Application Management
☐	Vegetative Buffers	☒	Good Housekeeping
☐	Non-Vegetative Stabilization	☒	Preventive Maintenance
☒	Concrete Waste Management	☒	Preservation of Top Soil
☐	Dewatering Controls	☐	Minimizing Soil Compaction
☐		☐	
☐		☐	

Did you **include specifications** of all the selected structural BMPs with the SWP3?

☒ Yes ☐ No, if no, explain the reason: Click here to enter text.

5.3.1 Perimeter Control

Permit requirement: *You must install controls along the perimeter of your site that will receive stormwater from your construction activities. (Examples of perimeter controls include, but are not limited to, **silt fences, fiber rolls, filter berms**, and **temporary diversion dikes.**)*

To comply with Part 4.2.C of OKR10 permit, I shall use the following type of perimeter control(s) at my construction site:

Perimeter Control Description: Silt fences will be installed along the perimeter of the site and around the topsoil stockpile. Silt fences will be installed by excavating a 12-inch-deep trench along the line of proposed installation. Wooden posts supporting the silt fence will be spaced 6 to 8 feet apart and driven securely into the ground; a minimum of 18 to 20 inches deep. The silt fence will be fastened securely to the posts with wire ties at the top, mid section, and bottom of the wooden post. The bottom edge of the silt fence will extend across the bottom of the trench and the trench will be backfilled and compacted to prevent storm water and sediment from discharging underneath the silt fence. For design specifications, see plan sheets

Installation Date(s): 11/17/2025

Maintenance Requirements: Silt fences will be inspected weekly and immediately after storm events to ensure it is intact and that there are no gaps where the fence meets the ground or tears along the length of the fence. If gaps or tears are found during the inspection, the fabric will be repaired or replaced immediately. Accumulated sediment will be removed from the fence base if it reaches one-third the height of the silt fence and hauled off-site for disposal at the local landfill. If accumulated sediment is creating noticeable strain on the fabric and the fence might fail from a sudden storm event, the sediment will be removed more frequently. Before the fence is removed from the project area, the sediment will be removed. The anticipated life span of the silt fence is 6 months and will likely need to be replaced after this period.

5.3.2 Sediment Track-Out

Permit requirement: *You must minimize the track-out of sediment onto off-site streets, other paved areas, and sidewalks from vehicles exiting your construction site. (**Note:** you may use most recent ODOT or OKC specifications for construction entrance/exit - use of aggregate stone with an underlying **geotextile or non-woven filter fabric, or turf mats.**)*

To comply with the Part 4.2.D of OKR10 permit, I shall use the following type of sediment track-out control at my construction site:

Track-Out Control/Construction Entrance/Exit Description: A stabilized construction entrance will be installed on North Leonard Street. The stabilized construction entrance shall be 20'x50' and shall consist of 8" minimum AASHTO M43, Size No. 2 (2.5" to 1.5") crushed stone.

Installation Date(s): 11/17/2025

Maintenance Requirements The exit will be inspected weekly and after storm events or heavy use. The exit will be maintained in a condition that will prevent tracking or flowing of sediment onto North Leonard Street. This could require adding additional crushed stone to the exit. All sediment tracked, spilled, dropped, or washed onto any adjacent street will be swept up immediately and hauled off-site for disposal. Sediment will be swept from the anti-tracking pad at least weekly, or

more often if necessary. If excess sediment has clogged the pad, the exit will be topdressed with new crushed stone. Replacement of the entire pad might be necessary when the pad becomes completely filled with sediment. The pad will be reshaped as needed for drainage and runoff control. Broken road pavement as a result of construction activities on roadways immediately adjacent to the project site will be repaired immediately. The stone anti-tracking pad will be removed before the subgrade of pavement is applied to the parking lot. The removed stone and sediment from the pad will be hauled off-site and disposed. site.

Track-out Removal/Cleaning:

☒ I shall remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal.

☒ I shall remove the deposited sediment by the **end of the same work day** in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day where sediment has been tracked-out from my construction site onto the surface of off-site streets, other paved areas, and sidewalks.

☒ I am prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control).

5.3.3 Stockpiled Sediment or Soil

Permit requirement: *You must control discharge of stormwater from Stockpiled Sediment or Soil.*

To comply with the Part 4.2.E of OKR10 permit, I shall use temporary perimeter sediment barrier such as ***berms, dikes, fiber rolls, silt fences, sandbag, or gravel bags*** to protect from contact with stormwater (including run-on).

I shall use appropriate cover or temporary stabilization such as ***mulching or hydro-mulching*** to avoid direct contact with precipitation or to minimize sediment discharge.

Installation Date(s): 11/17/2025

Maintenance Requirements: I shall not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, and/or surface water.

5.3.4 Minimize Dust

Permit requirement: *You must minimize the generation of dust to avoid pollutant discharges to the extent feasible through application of water or other dust suppression techniques.*

Dust Control Description: To comply with the permit requirement and to avoid any pollutants, particularly soil/sediment, from being discharged into surface waters, I shall apply/spray water using spray truck or sprinklers to minimize the generation of dust from my construction site.

5.3.5 Minimize the Disturbance of Steep Slopes

Permit requirement: *You must minimize the disturbance of steep slopes (i.e., slopes of 40% or greater).*

Steep Slope Control Description: _____

_____

Installation Date(s): N/A

Maintenance Requirements: Click here to enter text.

5.3.6 Preserve Topsoil

Permit requirement: *You must preserve native topsoil on your site, unless infeasible; you must stockpile and reuse it in areas that will be stabilized with vegetation.*

Topsoil Control Description: I shall preserve native topsoil on our site as much as possible and practicable.

Maintenance Requirements: I shall stockpile and reuse preserved top soil in areas that will be stabilized with vegetation.

5.3.7 Minimize Soil Compaction

Permit requirement: *In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed, you must minimize soil compaction.*

Soil Compaction Control Description: In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed, I shall restrict vehicle and/or equipment use in these areas to avoid or minimize soil compaction.

5.3.8 Protection of Storm Drain Inlets

Permit requirement: *If you discharge to a storm drain inlet that you have access to, you must install protection measures that remove sediment from your stormwater discharge. (Examples of inlet protection measures include **fabric filters, sandbags, or gravel barriers** -- Install inlet protection measures that remove sediment from your discharge prior to entry into the storm drain inlet.)*

Storm Drain Inlet Control Description: A combination of fiber rolls, gravel fabs, and filter fabric will be used to prevent sediments from entering the storm drainage system. For design specifications, refer to the provided inlet sediment trap detail(s) in the plans.

Installation Date(s): 12/16/2025

Maintenance Requirements: I shall clean, or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, I shall remove the deposited sediment by **the end of the same work day** in which it is found or by the end of the following work day if removal by the same work day is not feasible.

5.3.9 Constructed Stormwater Conveyance Channels

*(**Note:** Examples of velocity dissipation devices include **check dams, sediment traps, riprap, or grouted riprap at outlets**, include design specifications)*

Stormwater Conveyance Channel Control Description: Click here to enter text.

☐ If Silt dikes/Check dams are **used in series**, I shall space them at appropriate interval so that ***the base of the upstream dike is at the same elevation as the top of the next downstream dike***. Spacing of silt dikes/check dams is indicated on the site plans of SWP3.

Installation Date(s): _____N/A_____

Maintenance Requirements: all check dams/rip-rap will be inspected during facility inspection for erosion, undermining or breeches. Any damage will be repaired immediately.

5.3.10 Sediment Basins

Permit requirement*: For common drainage locations that serve an area of 10 or more acres disturbed at one time (or 5 acres if site is a high priority construction site), a temporary (or permanent) sediment basin shall be provided where attainable until final stabilization of the site.*

Are 10 or more (or 5 or more if site is a high priority construction site) acres draining to a common point?

☐ Yes ☒ No

Is a sediment basin included in the project? ☐ Yes ☐ No

If yes, what is the designed capacity for the storage?

☐ 3600 cubic feet per acre: _____

OR

☐ 2-year, 24 hour storm: _____

OR

☐ Other criteria were used to design basin: _____

_____

If no, explain why no sedimentation basin was included and describe required natural buffer areas and other controls implemented instead: _____
_____
_____

Maintenance Requirements: I shall keep the sediment basin in effective operating condition and remove accumulated sediment to maintain at least ½ of the design capacity of the sediment basin at all times.

5.3.11 Dewatering Practices

Permit requirement: *You are prohibited from discharging stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation associated with a construction activity, unless such waters are first effectively managed by appropriate controls.*

Dewatering Practice Description:
1. Do not discharge visible floating solids or foam
2. Use an oil-water separator or suitable filtration device (such as a cartridge filter) that is designed to remove oil, grease, or other products if dewatering wastewater is found to contain these materials
3. To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. In no case will surface waters be considered part of the treatment area
4. At all points where dewatering water is discharged, provide velocity dissipation. Examples of velocity dissipation include, but are not limited to, silt dikes, check dams, gravel bags, sediment traps, and rip rap.
5. With backwash water, either haul away for disposal or return it to the beginning of the treatment process
6. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications

Installation Date(s): N/A

Maintenance Requirements: Click here to enter text.

5.3.12 Other Stormwater Controls

Temporary Stabilization

Topsoil stockpiles and disturbed portions of the site, where construction activity temporarily ceases for at least 14 days, will be stabilized immediately with temporary seed and mulch. The temporary seed shall be as outlined:

Plant Type	per acre	per 1000 s.f.	Planting Date	Seeding Depth
Annual Ryegrass	40 lbs	0.9 lbs	09/05-11/30	0.25 inch
Elbon Rye	2 bu	3.0 lbs	08/15-11/30	2 inches
Wheat	2 bu	3.0 lbs	08/15-11/30	2 inches
Oats	3 bu	2.5 lbs	08/15-11/30	2 inches
Sorghums	60 lbs	1.4 lbs	03/01-09/15	2 inches
Sudan Grass	60 lbs	1.4 lbs	04/01-09/15	2 inches

Prior to seeding, subgrade shall be loosened to a depth of 2 to 3 inches and 450 pounds of 10-20-10 fertilizer applied to each acre to be stabilized. Soil shall be tested and lime treated if required. Mulch shall be used on all slopes greater than 5 percent or as needed. Area shall be watered daily or as needed to maintain adequate soil moisture until the plants exceed 1 inch in height.

Permanent Stabilization

Disturbed portions of the site where construction activities permanently cease shall be stabilized no later than 14 days after the last construction activity. The permanent stabilization shall consist of Bermuda grass, solid slab, sodding or seeding. Prior to sodding, subgrade shall be loosened to a depth of 2 to 3 inches and 450 pounds of 10-20-10 fertilizer applied to each acre to be stabilized. Soil shall be tested and lime treated if required. After sodding, each area shall be watered daily, or as required, to maintain adequate soil moisture until final acceptance. Placement and maintenance shall be in accordance with ODOT Specifications and City specifications. If applicable, refer to Landscape Plans for additional information on permanent stabilization.

Section 6: Pollution Prevention Controls

6.1 Spill Prevention and Responses

Spill Prevention

Is there an existing Spill Prevention Control and Countermeasure (SPCC) plan developed for the site?

☒ Yes ☐ No, if yes, keep a copy of the SPCC plan onsite with this SWP3.

If No, describe procedures for quickly stopping, containing, and cleaning up spills, leaks, and other releases:

Material Management Practices

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff.

1. Good Housekeeping: The following good housekeeping practices will be followed onsite during the construction project.
   a. An effort will be made to store only enough products required to do the job.
   b. All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
   c. Products will be kept in their original containers with the original manufacturer's label.
   d. Substances will not be mixed with one another unless recommended by the manufacturer.
   e. Whenever possible, all of a product will be used up before disposing of the container.
   f. Manufacturers' recommendations for proper use and disposal will be followed.
   g. The site supervisor will inspect daily to ensure proper use and disposal of materials.

2. Hazardous Products: These practices are used to reduce the risks associated with hazardous materials.
   a. Products will be kept in original containers unless they are not resealable.
   b. Original labels and material safety data will be retained; they contain important product information.
   c. If surplus must be disposed of, manufacturers', or local and State recommended methods for proper disposal will be followed.

Product Specific Practices

The following product specific practices will be followed onsite:

1. Petroleum Products
   All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers and clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

2. Fertilizers

   Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints

   All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system, but will be properly disposed of according to manufacturer's instructions, or State and local regulations.

4. Concrete Trucks

   All washing and back flushing of concrete mixer trucks will be done in an area established by the project superintendent. The area shall be fully contained by the use of silt fence or earth dikes. The debris left from the back flushing of concrete mixer trucks shall be removed from the site and disposed of according to local regulations.

5. Equipment and Vehicle Washing

   Per section 3.3.3.A.4 of OKR10, soaps, detergents, or solvents used in vehicle and equipment washing may not be discharged from the construction site (see Appendix E).

6. Sanitary Waste – All sanitary waste will be collected from the portable units a minimum of three times per week by a licensed sanitary waste management contractor, as required by local regulation. Portable units shall be staked securely to the ground to prevent turnover and spills from the unit.

Spill Control Practices

1. In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:
   a. Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
   b. Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include, but not be limited to, brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
   c. All spills will be cleaned up immediately after discovery. In the event of a petroleum based, or other hazardous substance spill (paints, fertilizers, cement), immediately prevent further discharge from hazardous source. Stop the spill from spreading by using an absorbent material such as Kitty Litter. Protect the contaminated area by placing a tarp and diverting all runoff from that area. Contact the proper authorities as to how to dispose of the contaminated materials.
      1. Small spills - stop the spill from spreading by using an absorbent material such as kitty litter. Protect the contaminated area by placing a tarp and diverting all runoff from that area. Contact the proper authorities as to how to dispose of the contaminated materials.

2. Large spills - stop the spill from spreading by using appropriate equipment to create a containment area, i.e. berms, sand bags, etc. Defer to ODOT for large scale cleanup and decontamination procedures.

d. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
e. Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.
f. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
g. The site supervisor will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

Emergency Spill Notification

In case of a toxic or hazardous material spill, notify:	Phone Numbers
Project Manager/Team Leader	TBD
Emergency – Fire, Police	911
County Local Emergency Planning Committee (LEPC)	918-367-2252
DEQ Spill Reporting Hotline (24-hr)	800-522-0206
NRC (National Response Center)	800-424-8802

6.2 Waste Management Procedures

All wastes generated at the construction site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste, shall be prevented from being discharged to Waters of the State. The following BMP measures will be used to handle trash disposal, hazardous or toxic waste, sanitary waste, recycling, and proper material handling:

☒ **Trash Dumpsters:** dumpsters will have a secure watertight lid, will be closed during precipitation or not in use, and will be placed away from stormwater conveyances and drains, and meet all federal, state, and municipal regulations. Only trash and construction debris from the site will be deposited in the dumpster. No construction materials will be buried on site.

☒ **Hazardous Waste Containment:** hazardous waste materials will be stored in appropriate and clearly marked containers and segregated from other non-waste materials.

☒ **Portable Toilets:** portable toilets will be secured to prevent tipping, located away from stormwater inlets and conveyances. These toilets will be anchored with the ground to prevent any tipped or knocked over and/or sand bags around to ensure wastewater doesn't mix with the stormwater.

☒ **Recycling Bins/Dumpsters**: wood pallets, cardboard boxes, and other recyclable construction scraps will be disposed of in a designated dumpster for recycling. The dumpster will have a secure watertight lid, will be closed during precipitation or not in use, and will be placed away from stormwater conveyances and drains and meet all local and state solid-waste management regulations.

☒ **Proper Material Handling:** containers will be tightly sealed when not in use, and excess paint shall be disposed of according to Oklahoma requirements and manufacturer's recommendations. Minimum amounts of fertilizer, as recommended by the manufacturer, will be used. Upon application the fertilizer will be worked into the soil to limit exposure to stormwater. Contents of partially used bags will be transferred to a sealable plastic bin, and then stored in a covered area.

☒ **Good housekeeping:** construction debris, trash, and other floatable material will be collected and prevented from becoming a pollutant source on the following schedule:
Click here to enter text.

☒ **Minimizing exposure:** construction products, materials, chemicals, and wastes will be stored in such a way that they are prevented from coming into contact with stormwater (e.g., plastic sheeting or temporary roofs).

☒ **Designated concrete washout:** all concrete washwater will be directed into a leak-proof container or pit. The container or pit will be designed so that no overflows can occur due to inadequate sizing or precipitation and located as far away as possible from surface waters and stormwater inlets or conveyances. I shall use the detail provided in the construction documents or approved equal to make the pit leak proof.

☐ Other: Click here to enter text.

6.3 Prohibited Discharges

The following discharges from the construction project/site are prohibited under the permit, and are considered a violation should any occur.

- Wastewater from the washout of concrete, unless managed by an appropriate control as described in Part 4.4.H of OKR10 permit;
- Wastewater from the washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, unless managed by an appropriate control as described in Part 4.4.H of OKR10 permit;
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- Soaps, detergents or solvents used in vehicle and equipment washing; and
- Toxic or hazardous substances from a spill or other release.

☒ In the event that one of these above-mentioned discharges occurs, I will take corrective action consistent with Part 7.4 of this SWP3.

Section 7: Procedures and Documentations

7.1 Maintenance and Repair

I shall ensure that all pollution prevention controls installed in accordance with the requirements of OPDES Construction General Permit OKR10 and remain in effective operating condition and are protected from activities that would reduce their effectiveness. All structural BMPs (i.e. all the Erosion & Sediment Controls) that require a repair of any kind (due to normal wear and tear, or as a result of damage) or require maintenance in order for the control to continue operating effectively shall be required/maintained in accordance with the OPDES Construction General Permit requirements. At a minimum, maintenance will be performed in the following specific instances:

- ☒ for perimeter controls, whenever sediment has accumulated to ½ or more the above-ground height of the control (*see Part 4.2.C of OKR10 permit*);
- ☒ where sediment has been tracked-out onto the surface of off-site streets or other paved areas (*see Part 4.2.D of OKR10 permit*);
- ☒ for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (*see Part 4.2.J of OKR10 permit*); and
- ☒ for sediment basins, as necessary to maintain at least ½ of the design capacity of the basin (*see Part 4.2.L of OKR10 permit*).
- ☒ for all structural BMPs, repair of any kind (due to normal wear and tear, or as a result of damage) or maintenance will be performed in order for the BMPs to continue operating effectively.

7.2 Approval from Local Office

- ☒ I shall check/already checked local offices (city and county offices) to ensure SWP3 for my construction activities is consistent with requirements of the City and/or County Offices.
- ☒ I shall update the SWP3, if necessary, to make consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or stormwater management site plans or site permits approved by local officials for which I received written notice.

7.3 Inspections

*(**Note:** An inspector must be knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention to assess conditions at the construction site that could impact stormwater quality, and the effectiveness of any stormwater controls.)*

Person Responsible for Inspections: The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a "qualified person." A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention. The Contractor's site representative will be the primary person responsible for inspections. The Contractor, at his discretion, delegates inspection responsibilities to other construction staff members who are qualified.

General Procedures: During each inspection, the following areas of the construction site will be inspected:

- Cleared, graded, or excavated areas of the site;
- Stormwater controls (e.g., perimeter controls, silt dykes, check dams, sediment basins, inlets, exit points etc.) and pollution prevention practices (e.g., pollution prevention practices for vehicle fueling/maintenance and washing, construction product storage, handling, and disposal, etc.) at the site;
- Material, waste, or borrow areas covered by the permit, and equipment storage and maintenance areas;
- Evidence of a spill, leak, or other type of pollutant discharge, or failure to have properly cleaned up a previous spill, leak, or other type of pollutant discharge;
- Areas where stormwater flows within the site, stormwater discharge points;
- Identify any other incidents of non-compliances observed; and
- Areas where stabilization has been implemented.

Inspection Frequency:

☐ **Once every 7 calendar days** and within 24 hours of the end of a storm event of 0.5 inches or greater, since my project is located in **ARC** or discharge to an impaired water.

☒ **Once every 14 calendar days** and within 24 hours of the end of a storm event of 0.5 inches or greater.

Reductions in Inspection Frequency (if applicable):

- For the reduction in inspections resulting from stabilization: **Once per month** for the portion of the site that was stabilized per Part 4.3 and 5.4 of OKR10 permit.

Rain Gauge to Measure Qualified Storm Event of 0.5 inches or greater:

Location of the Rain Gauge: at job trailer in an uncovered area

Inspection Report Forms:

Inspection Report Form has been prepared in accordance with the requirements of Part 5.4 of OKR10 permit. A copy of the Inspection Report Form that will be used during construction of this project included in **Attachment E** of this SWP3.
*(**Note:** Inspection report can be found under the **Construction Stormwater Templates and Additional Information** tab in the OKR10 link: https://www.deq.ok.gov/stormwater-permitting/okr10-construction-stormwater/.*

7.4 Corrective Action

General: Corrective actions are actions taken to modify, replace, or reinstall any stormwater control used at the site; clean up and dispose of spills, releases, or other deposits; or remedy a permit violation.

Corrective actions are triggered only for specific, more serious conditions (*see Part 5.5.A of OKR10 permit*). For any of the following conditions, a new or modified control shall be installed **no later than 7 calendar days** from the discovery:

- A required stormwater control was never installed or was installed incorrectly, or not in accordance with the corresponding OKR10 permit requirement;
- A stormwater control needs to be repaired or replaced (*beyond routine maintenance required in Part 5.3.L of OKR10 permit*);
- A stormwater control is not effective enough for the discharge to meet applicable water quality standards;
- A prohibited discharge (*see Parts 2.2, 4.2 and 4.4.B.2 of OKR10 permit*) is occurring or has occurred; or
- DEQ or MS4 Operator requires corrective action as a result of permit violations found during an inspection.

☒ I shall immediately take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events. I shall conduct corrective action(s) for each of the above-mentioned triggering conditions should they occur at my construction site.

Person Responsible for Corrective Actions: The Contractor's site representative will be the primary person responsible for corrective action. The Contractor may, at his discretion, delegate corrective action responsibilities to other construction staff members who are qualified.

Corrective Action Schedule/Specific Action Frequency:

☒ I shall perform all Corrective Actions (modify, replace, or reinstall), if identified, **no later than 7 calendar days from** the time of discovery.

Corrective Action Forms:

Corrective Action Report Form has been prepared in accordance with the requirements of Part 5.5.B of OKR10 permit. A copy of the Corrective Action Report Form that will be used during construction of this project included in **Attachment F** of this SWP3.

7.5 Employee Training

Person Responsible for Staff Training

Name: TBD **Title:** Construction Manager

Staff Training Requirements

Prior to the start of earth-disturbing activities, personal with the following responsibilities shall be trained to understand all the requirements of this SWP3:

- Proper design, installation, and maintenance/repair of stormwater controls.
- The proper application and storage of chemicals.
- Proper Inspection and corrective actions.

At minimum, all Personnel must be trained to understand:

- The location of all stormwater controls and the maintenance requirements for each of the control.
- The pollution prevention requirements outlined in this SWP3.
- When and how to conduct inspections, record applicable findings and take necessary corrective actions.

Frequency/Schedule of Employee Training: Annually

(***Note:*** *Employee training shall be conducted at least annually or more often if employee turnover is high*).

Employee training records and documentations shall be maintained using the **Employee Training Report** located in **Attachment G** of this SWP3.

7.6 Notification of Change of Ownership (NCO) for Individual Lots

☐ SWP3 will include documents if lots are sold and transfer to other new operator(s), (*see Part 3.1.B.5 and 3.7.I of OKR10 permit*). Documents will be included under **Attachment M** of this SWP3.

☒ NCO is not applicable to my project/site.

7.7 Sub-contractor Certifications

☐ Sub-contractor certification forms will not be used for this project.

☒ DEQ's sub-contractor certification form (**Attachment M**) will be used and kept onsite with the SWP3.

☐ A form other than DEQ's form will be used and kept onsite with the SWP3.

7.8 Record Keeping and Record Retention

☒ I shall retain copies of the SWP3 and all reports required by the 2022 OKR10 permit, and records of all data used to complete the NOI to be covered by this permit, for a **period of at least 3 years** from the date that the site is finally stabilized.

7.9 Posting a Notice

☒ I shall post a notice near the main entrance of the construction site with the following information:

- The OPDES permit number for the project or a copy of the NOI if a permit number has not yet been assigned;
- The name and telephone number of a local contact person;
- A brief description of the project; and
- Location of the SWP3

A **sample copy of the Notice** is included in **Attachment M** of this SWP3.

Section 8: Additional Monitoring (if applicable)

*(**Note:** Only applicable if you have Concrete Batch Plant and/or Asphalt Plant that is covered under your OKR10 authorization; if not applicable delete this section)*

8.1 Support Activity Covered by this Plan

☐ Concrete Batch Plant ☐ Asphalt Plant ☐ Both ☒ Not Applicable

8.2 Representative Outfall(s)

Are there substantially identical outfalls? ☐ Yes ☐ No

If yes, which outfalls are substantially identical? _____

Which outfall(s) will be sampled? _____

8.3 Structural & Non-Structural BMPs

Perimeter control and retention/detention pond will be installed. All exposed areas will be kept clean and orderly manner to minimize exposure. Structural controls will be maintained to keep these effective and operational.

8.4 Quarterly Visual Monitoring

In addition to routine site inspection, quarterly visual monitoring, qualified facility inspector will perform quarterly visual monitoring:

1. Quarterly visual monitoring assessments will be conducted using the form in **Attachment J** of this SWP3. Each drainage point will be visually inspected on a quarterly basis. If no qualifying storm event occurs during a monitoring quarter, this will be noted on the quarterly visual monitoring report for that quarter.

2. Samples will be collected from each outfall, will be examined and documented observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution using the quarterly visual monitoring form and will occur during daylight hours (e.g., normal working hours).

3. Completed quarterly visual monitoring forms will be kept with the SWP3.

8.5 Comprehensive Site Compliance Evaluation

1. A comprehensive site compliance evaluation will be conducted at least once annually. If the project is less than one year, at least one inspection will be conducted, which will include all areas where industrial materials or activities are exposed to stormwater and areas where spills and leaks have occurred within the past **3 years**.

2. A report resulting from this inspection will be submitted to DEQ by **March 1** of the year following the monitoring period using the form in **Attachment K** of this SWP3.

8.6 Numeric Effluent Limitation Monitoring for Asphalt Plant

1. Stormwater discharges from asphalt plants must comply with the limitations and monitoring requirements listed below.

Parameter	Limitation	Monitoring Frequency	Sample Type
Total Suspended Solids	23 mg/L, daily max. 15 mg/L, monthly avg.	1/year	Grab
Oil and Grease	15 mg/L, daily max. 10 mg/L, monthly avg.	1/year	Grab
pH	6.5 - 9.0, min. and max.	1/year	Grab

2. Annual monitoring period is from **January 1 to December 31**. If the project is less than one year, at least one sample must be collected.

3. Laboratory analyses for the parameters specified above must be performed by a laboratory certified by DEQ for those parameters.

4. Monitoring will be performed on a storm event that results in an actual discharge from the construction site (at least **0.1 inch** of stormwater event defined as a **measurable storm event**) that follows the preceding measurable storm event by at least 72 hours (3 days).

5. A minimum of one grab sample will be collected within the first 30 minutes of the discharge resulting from a measurable storm event. If it is not practicable to take the sample during the first 30 minutes, the sample must be collected as soon as practicable after the first 30 minutes and document why it was not possible to take samples within 30 minutes.

6. Monitoring information will be submitted on a discharge monitoring report (DMR) form (see **Attachment L**) by **March 1** of the year following the monitoring period.

7. If an exceedance of a numeric effluent limit occurs, follow-up monitoring will be conducted within 30 calendar days, or during the next qualifying storm event, of implementing corrective actions.

Person(s) and positions of person(s) responsible for monitoring: Click here to enter text.

Sample location(s): Click here to enter text.

Monitoring Schedules: Click here to enter text.

8.7 Additional Procedures for Concrete Batch Plant

Is there a mobile batch plant associated with this construction project/site?

☐ No ☐ Yes, If yes, permit number: OKG11_____

How long will the batch plant be utilized?

☐ Less than 180 days

☐ Greater than 180 days

Will wastewater be used for dust suppression?

☐ No ☐ Yes, If yes, the following requirements must be met:

a. The wastewater to be land applied shall be free from visible sheen of oil or globules of oil or grease and shall have a pH of between 6.5 s.u. and 9.0 s.u.
b. The wastewater to be land applied for dust suppression shall be visually inspected prior to land application. An inspection log shall be maintained at the site and made available to DEQ personnel upon request.
c. There shall be no land application of wastewater in areas where the depth to maximum seasonal groundwater level is less than 2 feet in accordance with OAC 252:616-5-1(b)(2)(E).
d. There shall be no land application of wastewater during periods of precipitation or when soil is saturated or frozen.
e. There shall be no runoff of wastewater from the land application site(s).
f. The permittee shall keep a logbook which records the time and date, the source and the volume of wastewater used, and the area to which the wastewater .

Describe the liner used for any surface impoundments: Click here to enter text.

Is the bottom of all surface impoundments at least 15 feet above groundwater levels?

☐ No ☐ Yes

The following berm/dike slope requirement will be followed:

☐ For sites utilized less than 180 days, a 1:2 (1 vertical to 2 horizontal) slope

☐ For sites utilized more than 180 days, a 1:3 (1 vertical to 3 horizontal) slope

Section 9: SWP3 Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: TBD **Title:** Construction Manager

Signature: _____ **Date:** _____

Section 10: SWP3 Modifications

I shall maintain records of modifications that will be made per Part 5.3.S of OKR10 permit, and other reasons in **Attachment H** of this SWP3:

Click here to enter text.

Section 11: SWP3 Attachments & Additional Documentation

The following documentations are attached to the SWP3:

Attachment A – General Location Map

A copy of general location map is included in Attachment A.

Attachment B – Site Map(s)

Copy of the site map(s) is/are included in Attachment B.

Attachment C – 2022 OKR10

Note: it is helpful to keep a printed-out copy of the 2022 OKR10 so that it is accessible to you for easy reference. However, you do not need to formally incorporate the entire 2022 OKR10 into your SWP3. As an alternative, you can include a reference to the permit and where it is kept at the site. Electronic copies are acceptable.

Attachment D – Notice of Intent (NOI)

A copy of your NOI is included in Attachment D.

Attachment E – Inspection Report

A copy of the Routine Facility Inspection Report Form is included in Attachment E.

Attachment F – Corrective Action Report

A copy of Corrective Action Report Form is included in Attachment F.

Attachment G – Employee Training Report

A copy of Employee Training Log is included in Attachment G.

Attachment H – SWP3 Modifications Log

A copy of Report on SWP3 Modifications/Amendments Log is included in Attachment H.

Attachment I – Site Stabilization Log

A copy of Site Stabilization Log is included in Attachment I.

Attachment J – Quarterly Visual Monitoring Report

A copy of Quarterly Visual Monitoring Report Form is included in Attachment J.

Attachment K – Annual Site Evaluation Report

A copy of Annual Comprehensive Site Compliance Evaluation Report (ACSCER) form is included in Attachment K.

Attachment L – Discharge Monitoring Report (DMR)

A copy of Discharge Monitoring Report (DMR) is included in Attachment L.

Attachment M – NCOs and Other Documentations

Any other Documentation required by this Permit is included in Attachment M.

Attachment A

General Location Map


Project Site

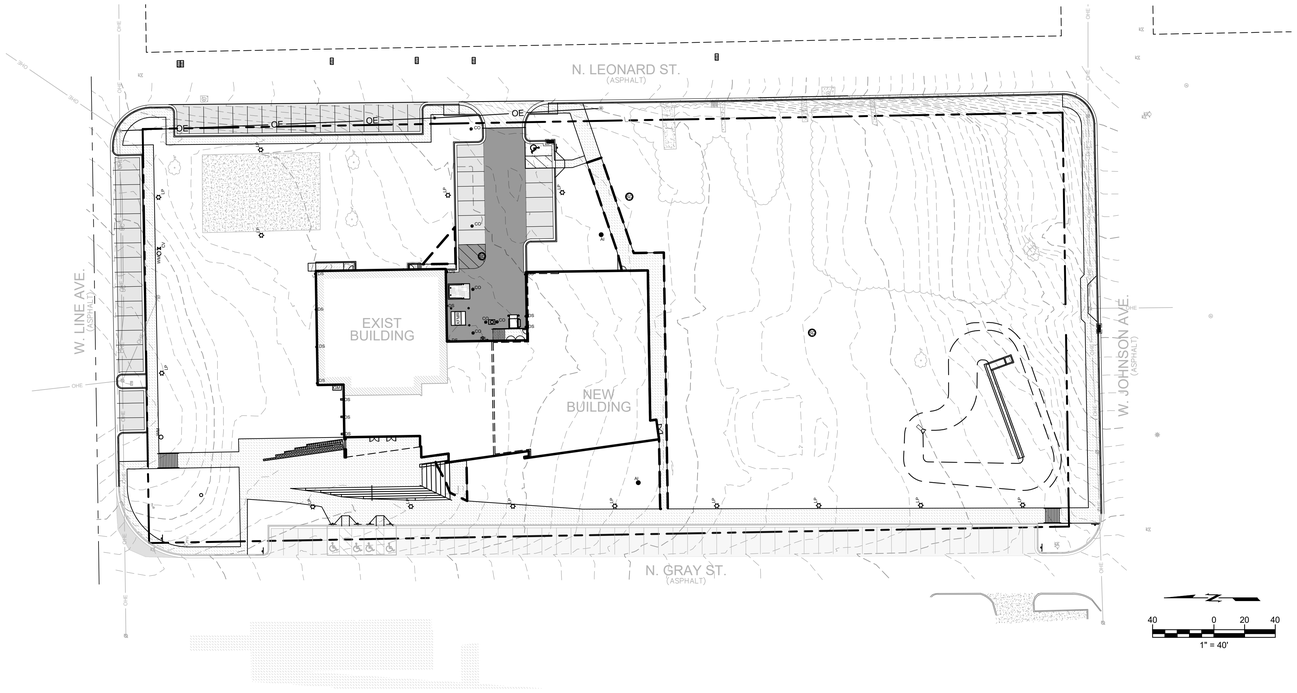
Attachment B

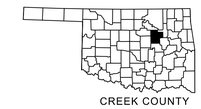
Site Maps

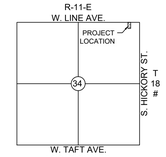
SITE DEVELOPMENT PLANS FOR

BOOKER T. WASHINGTON RECREATION CENTER

CITY OF SAPULPA







LOCATION MAP
SCALE: NTS

GENERAL NOTES:

1. CONDUCT SITE CLEARING OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. STREETS AND ROADWAYS SHALL BE THOROUGHLY CLEANED AND/OR SWEPT ON A DAILY BASIS OR MORE FREQUENTLY AS REQUIRED BY THE GOVERNING AUTHORITY. RESTORE DAMAGED IMPROVEMENTS TO ORIGINAL CONDITION AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.
2. THE CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES.
3. ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. UNLESS SPECIFIED OTHERWISE, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE STANDARDS, SPECIFICATIONS, AND REGULATIONS OF THE CITY OF SAPULPA, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY, AND STATE DEPARTMENT OF TRANSPORTATION, AND/OR THE APPROPRIATE LOCAL AUTHORITIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, PERMIT FEES, LICENSES, LICENSE FEES, TAP FEES, ETC.
6. ALL ELEVATIONS IN PAVED AREAS ARE TOP OF FINISHED PAVEMENT UNLESS OTHERWISE NOTED.
7. RELOCATION OF ANY UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM ENGINEER BEFORE ANY UTILITY RELOCATION.
8. NO DIMENSION MAY BE SCALED. REFER UNCLEAR ITEMS TO THE ENGINEER FOR INTERPRETATION.

EXCAVATION NOTIFICATION

1. ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING OF THE INTENT TO EXCAVATE NO LESS THAN 72 HOURS PRIOR TO SUCH EXCAVATION (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND HOLIDAYS).
2. CONTRACTORS TO CALL 811 (OR VISIT CALL811.COM) TO REQUEST UTILITY LOCATES. ONCE COMPLETION OF MARKINGS HAS BEEN CONFIRMED BY THE CONTRACTOR, NO AUTOMATED OR MECHANICAL EQUIPMENT SHOULD BE USED WITHIN TWO FEET ON EITHER SIDE OF THE MARKINGS (OR ANOTHER MORE STRINGENT TOLERANCE AS DIRECTED), AND EXISTING FACILITIES MUST BE EXPOSED BY HAND.
3. EXISTING UTILITY LOCATIONS SHOWN SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. LOCATIONS OF UNDERGROUND UTILITIES ON THESE DRAWINGS ARE APPROXIMATE ONLY AND BASED ON ACTUAL FIELD LOCATIONS OF VISIBLE STRUCTURES AND PLAN COMPUTATIONS.

SITE ACCESSIBILITY

1. ALL FEATURES OF THIS PROJECT INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURB RAMPS, ACCESSIBLE PARKING, AND ACCESSIBLE ROUTES SHALL COMPLY WITH THE APPLICABLE ACCESSIBILITY CODES [AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES; THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) PUBLISHED IN THE FEDERAL REGISTER AUGUST 2023; INTERNATIONAL BUILDING CODE (IBC); ICC A117.1; ETC.]
2. WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THESE GUIDELINES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURES. THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THESE GUIDELINES WITHOUT PRIOR, WRITTEN PERMISSION FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THESE GUIDELINES, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
3. GENERAL SLOPE GUIDANCE:
   - 3.1. CROSS SLOPES SHALL NOT EXCEED 1:50 (2.0%). PREFERRED SLOPE IS 1.5%.
   - 3.2. RUNNING SLOPES SHALL NOT EXCEED 5% EXCEPT AT RAMPS. PREFERRED MAXIMUM SLOPE IS 4.5%.
   - 3.3. RAMP RUNNING SLOPES SHALL NOT EXCEED 1:12 (8.3%). PREFERRED MAXIMUM SLOPE IS 7.8%.
   - 3.4. SLOPES AT LANDINGS, ACCESSIBLE PARKING STALLS, AND ACCESSIBLE AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION. PREFERRED MAXIMUM SLOPE IS 1.5%.
   - 3.5. EXCEPTIONS WITHIN THE PUBLIC RIGHT-OF-WAY: WHERE THE ESTABLISHED ADJACENT STREET GRADE EXCEEDS 5%, RUNNING SLOPES PARALLEL TO THE STREET SLOPES SHALL NOT EXCEED THE GENERAL GRADE ESTABLISHED FOR THE ADJACENT STREET. CURB RAMP RUNNING SLOPE CAN EXCEED 8.3% TO LIMIT THE RESULTING THE RAMP LENGTH TO 15 FEET.

GEOTECHNICAL

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY AIMRIGHT TESTING & ENGINEERING DATED APRIL 11, 2024.

SURVEY

1. EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION ARE SHOWN PER THE FIELD SURVEY PERFORMED BY WALLACE DESIGN COLLECTIVE DATED JULY 10, 2023.

SITE BENCHMARKS

BENCHMARK 1 CUT 'X' ON CURB ELEV: 786.38 N: 370393.42 E: 2523586.47	BENCHMARK 2 CUT 'X' ON CURB ELEV: 775.98 N: 370120.08 E: 2523560.04	BENCHMARK 3 CUT 'X' ON CURB ELEV: 764.31 N: 369770.43 E: 2523623.92
BENCHMARK 4 CUT 'X' ON CURB ELEV: 779.58 N: 370280.99 E: 2523879.06	BENCHMARK 5 CUT 'X' ON CURB ELEV: 741.05 N: 369771.50 E: 2523925.54	

LEGEND

ABBREVIATIONS

(M)	MEASURED DATA
(R)	RECORD DATA
BC	BACK OF CURB
BL	BUILDING LINE
CL	CENTERLINE
EG	EXISTING GRADE
ELEV	ELEVATION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOWLINE
GL	GUTTER LINE
HP	HIGH POINT
INV	INVERT
LF	LINEAR FEET
LP	LOW POINT
ME	MATCH EXISTING
RW	RIGHT-OF-WAY
SF	SQUARE FEET
SY	SQUARE YARDS
TBK	TOP OF BANK
TC	TOP OF CURB
TG	TOP OF GRATE
TOE	TOE OF BANK
TOF	TOP OF FOOTING
TP	TOP OF PAVEMENT
TR	TOP OF RIM
TS	TOP OF SIDEWALK
TW	TOP OF WALL

LINETYPES

	CENTERLINE
SF	SILT FENCE
	LIMITS OF CONSTRUCTION
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EASEMENT
X X	FENCE
	PROPERTY LINE
	LOT LINE
	BUILDING SETBACK
FO	FIBER OPTIC
OC	OVERHEAD COMMUNICATION
UC	UNDERGROUND COMMUNICATION
OE	OVERHEAD ELECTRIC
UE	UNDERGROUND ELECTRIC
G	NATURAL GAS
FM	SEWER FORCE MAIN
SS	SANITARY SEWER MAIN
SSL	SANITARY SEWER SERVICE
	DRAINAGE AREA, MAJOR
	DRAINAGE AREA, MINOR
	DRAINAGE FLOW PATH
SD	STORM DRAINAGE PIPE
F	FIRE LINE
W	WATER LINE
WSL	WATER SERVICE LINE
IRR	IRRIGATION LINE
RFL	REINFORCED SILT FENCE

SYMBOLS

	UTILITY POLE
	LIGHT POLE
	GUY ANCHOR
	ELECTRIC BOX
	ELECTRIC METER
	ELECTRIC TRANSFORMER
	A/C UNIT
	ELECTRIC MANHOLE
	GAS METER
	GAS VALVE
	OIL/GAS WELLHEAD
	VENT PIPE
	PIPELINE MARKER
	COMMUNICATION PEDESTAL
	COMMUNICATION MANHOLE
	SEWER CLEAN-OUT
	SANITARY SEWER MANHOLE
	DOWNSPOUT
	ROOF DRAIN
	STORM DRAIN MANHOLE
	FIRE DEPARTMENT CONNECTION
	FIRE HYDRANT
	IRRIGATION CONTROL VALVE
	SHUT-OFF VALVE
	SPRINKLER HEAD
	WATER METER
	WATER VALVE
	YARD HYDRANT
	PIPE BOLLARD
	BENCHMARK
	ACCESSIBLE PARKING
	MAILBOX
	MONITORING WELL
	POTHOLE
	SIGN

LIST OF SHEETS

SHEET NO.	SHEET NAME
C-100	GENERAL NOTES
C-200	SURVEY - NORTH
C-201	SURVEY - SOUTH
C-300	DEMOLITION AND EROSION CONTROL PLAN
C-400	SITE PLAN
C-500	GRADING PLAN
C-501	DRAINAGE MAP
C-502	DETENTION POND DETAILS
C-600	UTILITY PLAN
C-700	PROFILES
C-800	DETAILS
C-801	DETAILS

ENGINEER:
WALLACE DESIGN COLLECTIVE, PC
123 N MARTIN LUTHER KING JR BLVD
TULSA, OKLAHOMA 74103
918.584.5858
SCOTT RODEHAVER, P.E.

OWNER:
CITY OF SAPULPA
425 E DEWEY
SAPULPA, OK 74066

GAS:
OKLAHOMA NATURAL GAS COMPANY
ATTN: SHARI CLEMENTE
5848 E 15TH STREET
TULSA, OKLAHOMA 74112
918.947.7617

COMMUNICATIONS:
AT&T
ATTN: BRETT ASHLOCK
509 S DETROIT, 9TH FLOOR
TULSA, OKLAHOMA 74106
918.779.9299

COX COMMUNICATIONS
ATTN:
11811 EAST 51ST STREET
TULSA, OKLAHOMA 74146
918.

ELECTRIC:
OG&E
ATTN: STEVE WHITEHOUSE
WHITEHSD@OGE.COM
918.261.7118

UTILITY CONTACT:
THE CITY OF SAPULPA
424 E. HOBSON AVE.
SAPULPA, OKLAHOMA 74066
918.248.5928

AS-BUILTS:

THE CONTRACTOR SHALL KEEP ON SITE A CURRENT SET OF THE APPROVED CONSTRUCTION WORKING DRAWINGS AT ALL TIMES. THE CONTRACTOR SHALL MARK (IN RED INK) ALL CHANGES MADE TO THE APPROVED PLANS. THESE CHANGES MAY BE INITIATED FROM FIELD CONDITIONS, CHANGES MADE BY THE ENGINEER OF RECORD, OR CHANGES REQUESTED BY REPRESENTATIVES OF THE JURISDICTIONS HAVING AUTHORITY. ALL CHANGES SHALL BE REVIEWED AND AGREED TO BY THE ENGINEER OF RECORD PER AN RFI SUBMITTAL PROCESS. THE CONTRACTOR SHALL SUBMIT THE WORKING DRAWINGS TO THE ENGINEER OF RECORD AFTER FINAL INSPECTION OF THE PROJECT TO SERVE AS A BASIS FOR DEVELOPMENT OF FINAL AS-BUILT RECORD DOCUMENTS.

Know what's below. Call before you dig.

CAUTION
NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES.

STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

wallace design collective
wallace design collective, pc
structural· civil· landscape· survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma ca1460
exp: 6-30-27

city of Sapulpa

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
CONSTRUCTION DOCUMENTS

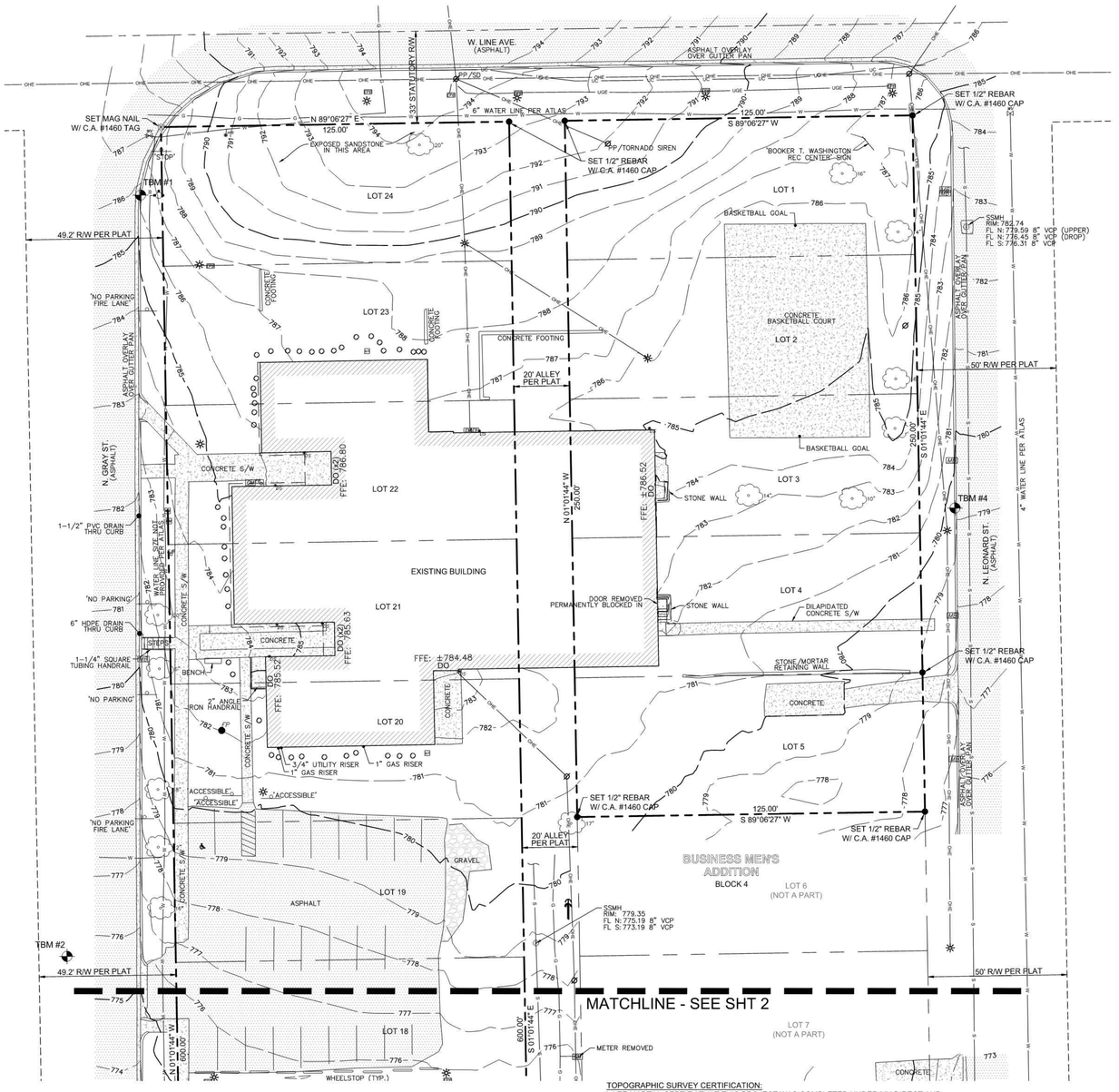
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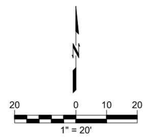
08/29/25

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025
GENERAL NOTES

C-100

\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 General Notes.dwg PLOT:8/29/2025 5:22:16 PM ORIG SIZE:24"X36"







LOCATION MAP
SCALE: NTS

LEGEND

POWER POLE	FIRE HYDRANT
LIGHT POLE	WATER METER
GUY ANCHOR	WATER VALVE
ELECTRIC PULL BOX	WATER HYDRANT
ELECTRIC METER	SEWER CLEAN-OUT
ELECTRIC BOX	SANITARY SEWER MANHOLE
ELECTRIC JUNCTION BOX	ACCESSIBLE PARKING
A/C UNIT	BENCHMARK
GAS METER	PIPE BOLLARD
GAS VALVE	MAILBOX
DOWNSPOUT	FLAG POLE
SIGN	TREE
	BUSH

DO DOOR OPENING
FF/FFE FINISHED FLOOR ELEVATION
PP/SD POWER POLE W/ SERVICE DROP

UGE UNDERGROUND ELECTRIC
G GAS LINE
OHE OVERHEAD ELECTRIC
S SANITARY SEWER LINE
W WATER LINE
WOVEN WIRE FENCE
METAL PIPE FENCE
890 MAJOR CONTOUR (5 FT INT.)
889 MINOR CONTOUR (1 FT INT.)

SITE BENCHMARKS

BENCHMARK 1
CUT 'X' ON CURB
ELEV: 786.38
N: 370393.42
E: 2523586.47

BENCHMARK 2
CUT 'X' ON CURB
ELEV: 775.98
N: 370120.08
E: 2523560.04

BENCHMARK 3
CUT 'X' ON CURB
ELEV: 764.31
N: 369770.43
E: 2523623.92

BENCHMARK 4
CUT 'X' ON CURB
ELEV: 779.58
N: 370280.99
E: 2523879.06

BENCHMARK 5
CUT 'X' ON CURB
ELEV: 741.05
N: 369771.50
E: 2523925.54

LEGAL DESCRIPTION:
ALL OF BLOCK FOUR (4), LESS AND EXCEPT LOTS SIX (6) AND SEVEN (7), BLOCK FOUR (4) BUSINESS MEN'S ADDITION, TO THE CITY OF SAPULPA, CREEK COUNTY, OKLAHOMA, ACCORDING TO THE RECORDED PLAT THEREOF.

BOUNDARY SURVEY CERTIFICATION:
THIS PLAT OF SURVEY MEETS THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED ADOPTED BY THE OKLAHOMA STATE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS.

WITNESS MY HAND AND SEAL THIS 10TH DAY OF JULY, 2023.



NOTES:
- THE BASIS OF BEARING BEING NORTH 01°01'44" WEST AS THE WEST LINE OF BLOCK FOUR (4), BUSINESS MEN'S ADDITION TO THE CITY OF SAPULPA, PER OKLAHOMA STATE PLANE COORDINATE SYSTEM, NORTH ZONE.
- ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES PER ONE-CALL LOCATES AND VISIBLE SURFACE FEATURES.
- THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHALL BE MARKED AND VERIFIED BY THE CONTRACTOR PRIOR TO EXCAVATION OR BORING.
- NO ABSTRACT OF TITLE OR ATTORNEY'S TITLE OPINION WAS PROVIDED FOR THE COMPLETION OF THIS SURVEY.
- A TITLE COMMITMENT, INDICATING APPLICABLE EASEMENTS, HAS NOT BEEN PROVIDED, THEREFORE ALL EASEMENTS MAY NOT BE SHOWN HEREON.
- SUBJECT PROPERTY HAS DIRECT ACCESS TO LINE AVE., GRAY ST., LEONARD ST., AND JOHNSON AVE., BEING A DEDICATED/PLATTED PUBLIC ROADWAYS.
- WALLACE DESIGN COLLECTIVE, PC, WAS NOT CONTRACTED TO RESEARCH EASEMENTS OR ENCUMBRANCES OF RECORD, THEREFORE THE SUBJECT PROPERTY MAY HAVE EASEMENTS NOT SHOWN HEREON.
- THE VERTICAL DATUM FOR THIS SURVEY BASED UPON GPS DATA (NAVD88).
- THE HORIZONTAL DATUM FOR THIS SURVEY BASED ON OKLAHOMA STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD83.
- LAST SITE VISIT: JUNE 30, 2023

TOPOGRAPHIC SURVEY CERTIFICATION:
I, LEE MARTIN, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THIS SURVEY WAS PERFORMED TO MEET THE SPECIFICATIONS FOR TOPOGRAPHIC AND PLANIMETRIC MAPPING CONTAINED IN THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED BY THE OKLAHOMA STATE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS. THE ORIGINAL DATA WAS OBTAINED ON JUNE 2, 2023; THAT THE SURVEY WAS COMPLETED ON JUNE 30, 2023; THAT CONTOURS CLOUDED AND NOTED MAY NOT MEET THE STANDARDS; AND ALL COORDINATES ARE BASED ON OKLAHOMA STATE PLANE COORDINATES, NORTH ZONE NAD83 (2011) AND ALL ELEVATIONS ARE BASED ON NAVD88.

OKIE811 Know what's below. Call before you dig.

CAUTION
NOTICE TO CONTRACTOR

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SURVEY NOTE:
THIS SHEET IS FOR THE CONVENIENCE OF THE CONTRACTOR. IT IS INTENDED FOR GENERAL SURVEY INFORMATION ONLY. SURVEY INFORMATION WAS REPRODUCED BY ELECTRONIC TRANSFER FROM THE SURVEYOR. ORIGINAL SURVEY DRAWINGS AVAILABLE FROM THE SURVEYOR.
NOTE: SURVEY SCALED TO FIT PAGE.

wallace design collective

wallace design collective, pc
structural · civil · landscape · survey
416 north walnut avenue, suite 200
oklahoma city, oklahoma 73104
405.236.5858 · 800.364.5858
wallace.design
ok ca 1460 exp 06.30.23

BOOKER T. WASHINGTON RECREATION CENTER

209 N. GRAY ST. SAPULPA, OK

REV	DESCRIPTION	DATE

PROJECT NO. 2340428

SHEET NAME
TOPOGRAPHIC SURVEY

SHEET NO.
1 OF 2

STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

wallace design collective

wallace design collective, pc
structural · civil · landscape · survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma ca1460
exp: 6-30-27

CITY OF SAPULPA

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA

CONSTRUCTION DOCUMENTS

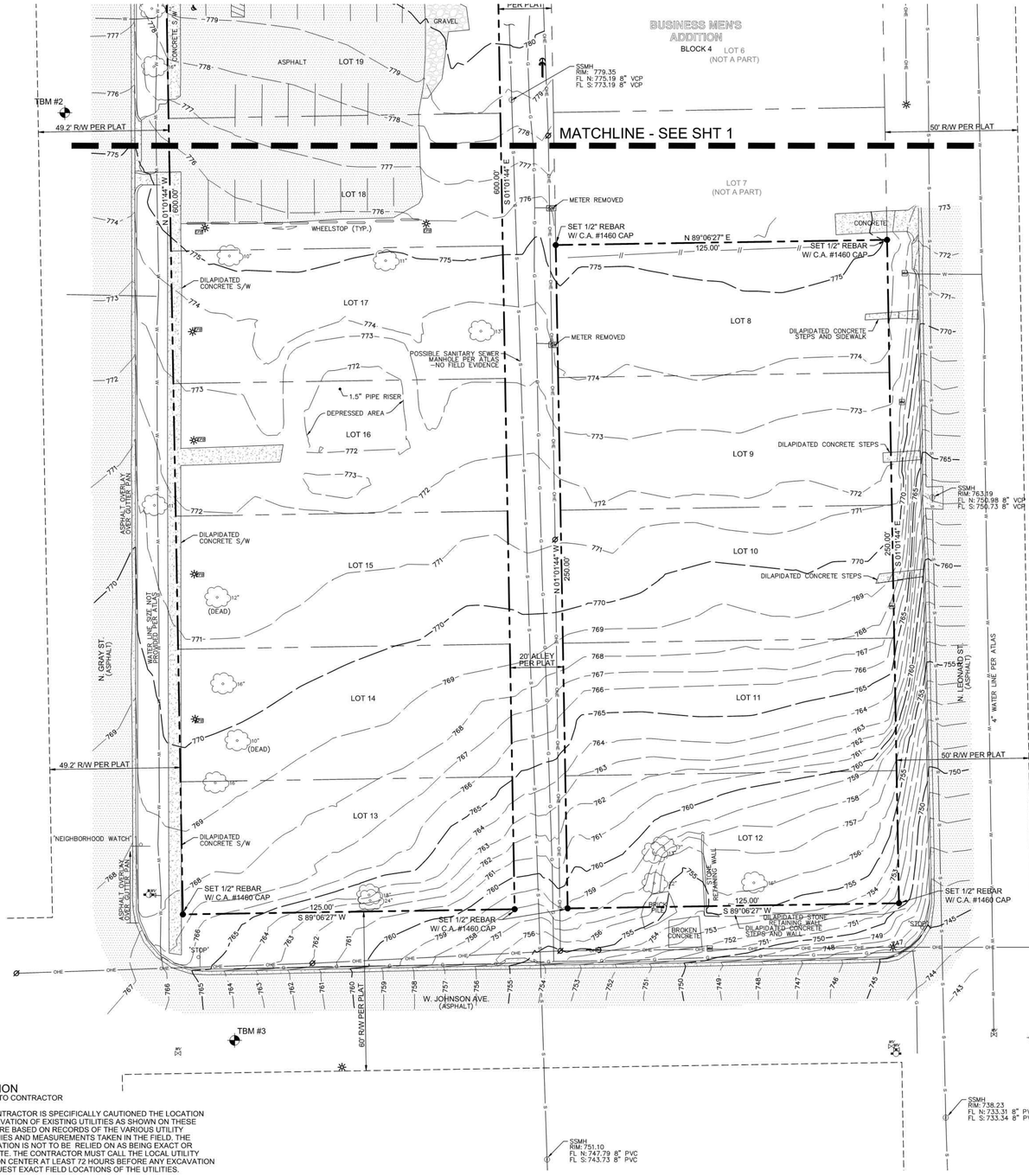
MARK	DESCRIPTION	DATE

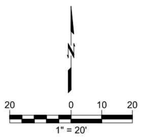
PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

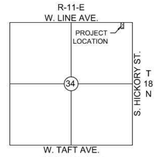
SURVEY - NORTH

C-200

\\Civil-Server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 Survey.dwg PLOT:8/29/2025 5:22:22 PM ORIG SIZE:24"X36"
\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Survey\dwg\2340428 Existing.dwg PLOT:7/9/2023 7:07:15 PM ORIG SIZE:24"X36"







LOCATION MAP
SCALE: NTS

LEGEND

	POWER POLE		FIRE HYDRANT
	LIGHT POLE		WATER METER
	GUY ANCHOR		WATER VALVE
EP	ELECTRIC PULL BOX		WATER HYDRANT
EM	ELECTRIC METER		SEWER CLEAN-OUT
E	ELECTRIC BOX		SANITARY SEWER MANHOLE
	ELECTRIC JUNCTION BOX		ACCESSIBLE PARKING
	A/C UNIT		BENCHMARK
GM	GAS METER		PIPE BOLLARD
	GAS VALVE		MAILBOX
	DOWNSPOUT		FLAG POLE
	SIGN		TREE
			BUSH

DO	DOOR OPENING
FF/FE	FINISHED FLOOR ELEVATION
PP/SD	POWER POLE W/ SERVICE DROP
UGE	UNDERGROUND ELECTRIC
G	GAS LINE
OHE	OVERHEAD ELECTRIC
S	SANITARY SEWER LINE
W	WATER LINE
	WOVEN WIRE FENCE
O O	METAL PIPE FENCE
890	MAJOR CONTOUR (5 FT INT.)
889	MINOR CONTOUR (1 FT INT.)

SITE BENCHMARKS

BENCHMARK 1 CUT 'X' ON CURB ELEV: 786.38 N: 370393.42 E: 2523586.47	BENCHMARK 2 CUT 'X' ON CURB ELEV: 775.98 N: 370120.08 E: 2523560.04	BENCHMARK 3 CUT 'X' ON CURB ELEV: 764.31 N: 369770.43 E: 2523623.92
BENCHMARK 4 CUT 'X' ON CURB ELEV: 779.58 N: 370280.99 E: 2523679.06	BENCHMARK 5 CUT 'X' ON CURB ELEV: 741.05 N: 369771.50 E: 2523925.54	

LEGAL DESCRIPTION:
ALL OF BLOCK FOUR (4), LESS AND EXCEPT LOTS SIX (6) AND SEVEN (7), BLOCK FOUR (4) BUSINESS MEN'S ADDITION, TO THE CITY OF SAPULPA, CREEK COUNTY, OKLAHOMA, ACCORDING TO THE RECORDED PLAT THEREOF.

BOUNDARY SURVEY CERTIFICATION:
THIS PLAT OF SURVEY MEETS THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED ADOPTED BY THE OKLAHOMA STATE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS.

WITNESS MY HAND AND SEAL THIS 10TH DAY OF JULY, 2023.

LICENSED PROFESSIONAL LAND SURVEYOR — LEE MARTIN 2004 — OKLAHOMA

7-10-23

TOPOGRAPHIC SURVEY CERTIFICATION:
I, LEE MARTIN, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THIS SURVEY WAS PERFORMED TO MEET THE SPECIFICATIONS FOR TOPOGRAPHIC AND PLANIMETRIC MAPPING CONTAINED IN THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED BY THE OKLAHOMA STATE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS. THE ORIGINAL DATA WAS OBTAINED ON JUNE 2, 2023; THAT THE SURVEY WAS COMPLETED ON JUNE 30, 2023; THAT CONTOURS CLOUDED AND NOTED MAY NOT MEET THE STANDARDS; AND ALL COORDINATES ARE BASED ON OKLAHOMA STATE PLANE COORDINATES, NORTH ZONE NAD83 (2011) AND ALL ELEVATIONS ARE BASED ON NAVD88.

NOTES:
- THE BASIS OF BEARING BEING NORTH 01°01'44" WEST AS THE WEST LINE OF BLOCK FOUR (4), BUSINESS MEN'S ADDITION TO THE CITY OF SAPULPA, PER OKLAHOMA STATE PLANE COORDINATE SYSTEM, NORTH ZONE.
- ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES PER ONE-CALL LOCATES AND VISIBLE SURFACE FEATURES.
- THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHALL BE MARKED AND VERIFIED BY THE CONTRACTOR PRIOR TO EXCAVATION OR BORING.
- NO ABSTRACT OF TITLE OR ATTORNEY'S TITLE OPINION WAS PROVIDED FOR THE COMPLETION OF THIS SURVEY.
- A TITLE COMMITMENT, INDICATING APPLICABLE EASEMENTS, HAS NOT BEEN PROVIDED, THEREFORE ALL EASEMENTS MAY NOT BE SHOWN HEREON.
- SUBJECT PROPERTY HAS DIRECT ACCESS TO LINE AVE., GRAY ST., LEONARD ST., AND JOHNSON AVE., BEING A DEDICATED/PLATTED PUBLIC ROADWAYS.
- WALLACE DESIGN COLLECTIVE, PC, WAS NOT CONTRACTED TO RESEARCH EASEMENTS OR ENCUMBRANCES OF RECORD, THEREFORE THE SUBJECT PROPERTY MAY HAVE EASEMENTS NOT SHOWN HEREON.
- THE VERTICAL DATUM FOR THIS SURVEY BASED UPON GPS DATA (NAVD88).
- THE HORIZONTAL DATUM FOR THIS SURVEY BASED ON OKLAHOMA STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD83.
- LAST SITE VISIT: JUNE 30, 2023

OKIE 811 — Know what's below. Call before you dig.

CAUTION
NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES.

SURVEY NOTE:
THIS SHEET IS FOR THE CONVENIENCE OF THE CONTRACTOR. IT IS INTENDED FOR GENERAL SURVEY INFORMATION ONLY. SURVEY INFORMATION WAS REPRODUCED BY ELECTRONIC TRANSFER FROM THE SURVEYOR. ORIGINAL SURVEY DRAWINGS AVAILABLE FROM THE SURVEYOR.
NOTE: SURVEY SCALED TO FIT PAGE.

wallace design collective
wallace design collective, pc
structural · civil · landscape · survey
490 north walnut avenue, suite 200
oklahoma city, oklahoma 73104
405.235.5858 · (800.364.5858
wallacedesign
ok: ca 1460 exp 06.30.23

BOOKER T. WASHINGTON RECREATION CENTER

209 N. GRAY ST. SAPULPA, OK

REV	DESCRIPTION	DATE

PROJECT NO. 2340428

SHEET NAME
TOPOGRAPHIC SURVEY

SHEET NO. 2 OF 2

STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

wallace design collective
wallace design collective, pc
structural · civil · landscape · survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma ca1460
exp: 6-30-27

City of Sapulpa

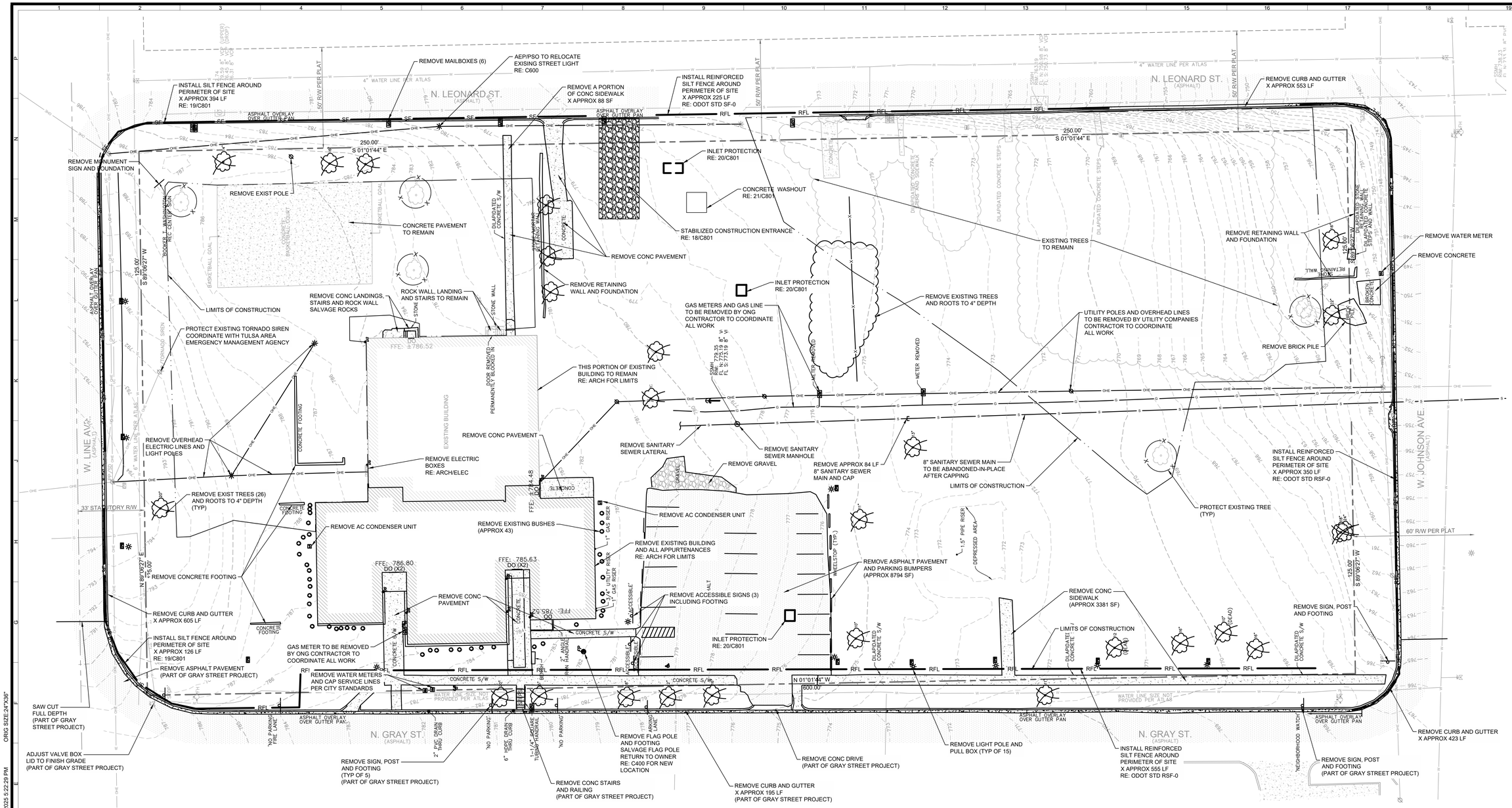
BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
CONSTRUCTION DOCUMENTS

MARK	DESCRIPTION	DATE

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025
SURVEY - SOUTH

C-201

\\Civil-Server\Projects\2340428 Booker T Washington Recreation Center\Dwgs\PRODUCTION\2340428 Survey.dwg PLOT: 8/29/2025 5:22:23 PM ORIG SIZE: 24"X36"
\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Survey\Dwg\2340428 Existing.dwg PLOT: 7/9/2023 7:07:23 PM ORIG SIZE: 24"X36"



GENERAL DEMOLITION NOTES:

1. ALL CONCRETE AND ASPHALT NOTED FOR REMOVAL SHALL BE SAW CUT FULL DEPTH AND REMOVED OFF SITE.
2. CONTRACTOR SHALL PROTECT ALL SURVEY CONTROL POINTS.
3. CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS OFF SITE.
4. UNLESS OTHERWISE NOTED TO BE REMOVED, ALL EXISTING STRUCTURES, FENCING, TREES, ETC., WITHIN CONSTRUCTION AREA ARE TO REMAIN. ALL ITEMS TO BE REMOVED SHALL BE DISPOSED OF OFF SITE. ALL COST SHALL BE INCLUDED IN BASE BID.
5. WITH PRIOR APPROVAL, CONTRACTOR MAY ESTABLISH AN ON-SITE STAGING AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING STAGING AREA TO ITS ORIGINAL CONDITION. SECURITY OF STAGING AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. ON-SITE VEGETATION SHALL BE PROTECTED AS NOTED. IN DESIGNATED PROTECTION AREAS WHERE THE CONTRACTOR DOES NOT PROTECT VEGETATION AS NOTED, CONTRACTOR SHALL RESTORE VEGETATION TO EXISTING CONDITION AT NO ADDITIONAL EXPENSE TO THE OWNER, TO THE SATISFACTION OF THE ARCHITECT.
7. CONTRACTOR SHALL PROTECT ALL ABOVE GROUND UTILITY FEATURES NOT BEING REMOVED INCLUDING, BUT NOT LIMITED TO, MANHOLES, VALVES, AND INLETS. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
8. TOPSOIL STOCKPILES AND DISTURBED PORTIONS OF THE SITE, WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR AT LEAST 14 DAYS, SHALL BE STABILIZED IMMEDIATELY WITH TEMPORARY SEED AND MULCH PER THE AUTHORITY HAVING JURISDICTION.
9. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, LANE CLOSURES, DETOURS, ETC. BOTH VEHICULAR AND PEDESTRIAN.
10. CONTRACTOR SHALL PROVIDE TEMPORARY UTILITY SERVICE IF REQUIRED.
11. CONTRACTOR SHALL ENSURE CONSTRUCTION SITE HAS POSITIVE DRAINAGE THROUGHOUT THE DURATION OF CONSTRUCTION.
12. REFER TO ARCHITECT PLANS FOR EXTENTS OF BUILDING REMOVAL. COORDINATE WITH UTILITY PROVIDER(S) TO ENSURE ALL UTILITIES ARE SHUT OFF AND CAPPED PRIOR TO DEMOLITION. SERVICE LINES SHALL BE REMOVED AND CAPPED BACK TO MAIN UTILITY LINE, UNLESS NOTED OTHERWISE.
13. PRIOR TO UTILITY DEMOLITION COORDINATE WITH AUTHORITY HAVING JURISDICTION.
14. UTILITIES BEING REMOVED OR RELOCATED SHALL BE ISOLATED AND SERVICE DISCONNECTED PRIOR TO ANY DEMOLITION.
15. NO UTILITY INTERRUPTIONS WILL BE ALLOWED WITHOUT CONSENT OF THE OWNER. CONTRACTOR SHALL NOTIFY THE OWNER AND ARCHITECT A MINIMUM OF FOUR WORKING DAYS PRIOR TO THE REQUESTED SHUT DOWN.

TOTAL DISTURBED AREA:

3.08 ACRES

TOTAL DISTURBED AREA	3.08 ACRES
EXISTING IMPERVIOUS AREA	40,768 SF
PROPOSED IMPERVIOUS AREA	70,146 SF
INCREASE IN IMPERVIOUS AREA	29,378 SF

GENERAL EROSION CONTROL NOTES:

1. ALL GRADING AND EROSION CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN, THE CITY OF SAPULPA STANDARDS AND SPECIFICATIONS, AND STATE PERMITTING REQUIREMENTS, RE: ODEQ PERMIT OKR10.
2. THE PERMITTEE SHALL BE RESPONSIBLE FOR NOTIFYING THE LAND OWNER AND EACH CONTRACTOR OR ENTITY (INCLUDING UTILITY CREWS AND CITY EMPLOYEES OR THEIR AGENTS) WHO WILL PERFORM WORK AT THE SITE OF THE EXISTENCE OF THE SWPPP AND TO WHAT ACTIONS OR PRECAUTIONS SHALL BE TAKEN WHILE ON-SITE TO MINIMIZE THE POTENTIAL FOR EROSION AND THE POTENTIAL FOR DAMAGING ANY BMP. THE PERMITTEE IS RESPONSIBLE FOR ANY DAMAGE A SUBCONTRACTOR MAY DO TO ESTABLISHED BMPS AND ANY SUBSEQUENT WATER QUALITY VIOLATION RESULTING FROM THE DAMAGE.
3. ENSURE THE DESIGN, INSTALLATION, AND MAINTENANCE OF EFFECTIVE EROSION AND SEDIMENT CONTROLS TO MINIMIZE THE DISCHARGE OF POLLUTANTS. AT A MINIMUM, SUCH CONTROLS MUST BE DESIGNED, INSTALLED, AND MAINTAINED TO:
   - 3.1. CONTROL STORMWATER VOLUME, VELOCITY, AND PEAK FLOW RATES WITHIN THE SITE TO MINIMIZE SOIL EROSION;
   - 3.2. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND TO MINIMIZE DOWNSTREAM CHANNEL AND STREAM BANK EROSION AND SCOUR;
   - 3.3. MINIMIZE THE AMOUNT OF EXPOSED SOIL DURING CONSTRUCTION ACTIVITY;
   - 3.4. MINIMIZE THE DISTURBANCE OF STEEP SLOPES;
   - 3.5. MINIMIZE SEDIMENT DISCHARGES FROM THE SITE. ADDRESS FACTORS SUCH AS:
   - 3.6. PROVIDE AND MAINTAIN NATURAL BUFFERS AROUND SURFACE WATERS
   - 3.7. DIRECT STORMWATER TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORMWATER INFILTRATION AND FILTERING, UNLESS INFEASIBLE, AND
   - 3.8. MINIMIZE SOIL COMPACTION AND PRESERVE TOPSOIL WHERE PRACTICABLE
4. INSTALLATION OF BMPS NECESSARY TO PREVENT SOIL EROSION AND SEDIMENTATION AT THE DOWNGRADIENT PROJECT BOUNDARY (E.G. BUFFERS, PERIMETER CONTROLS, EXIT POINT CONTROLS, STORM DRAIN INLET PROTECTION) MUST BE COMPLETE PRIOR TO THE START OF ALL PHASES OF CONSTRUCTION. BY THE TIME CONSTRUCTION ACTIVITY IN ANY GIVEN PORTION OF THE SITE BEGINS, DOWNGRADIENT BMPS MUST BE INSTALLED AND OPERATIONAL TO CONTROL DISCHARGES FROM THE INITIAL SITE CLEARING, GRADING, EXCAVATING, AND OTHER EARTH-DISTURBING ACTIVITIES. ADDITIONAL BMPS SHALL BE INSTALLED AS NECESSARY THROUGHOUT THE LIFE OF THE PROJECT. FOLLOWING THE INSTALLATION OF THESE INITIAL BMPS, ALL BMPS NEEDED TO CONTROL DISCHARGES SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO SUBSEQUENT EARTH DISTURBING ACTIVITIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A STABILIZED CONSTRUCTION ENTRANCE AND FOR CLEANING OF VEHICLE WHEELS IN ACCORDANCE WITH THE CITY OF SAPULPA STANDARDS AND SPECIFICATIONS.
6. SILT FENCES: PLACEMENT OF SILT FENCES SHALL BE AS SHOWN ON THESE PLANS. FENCING WHICH BECOMES DAMAGED SHALL BE REPLACED PROMPTLY. DEPOSITS OF SILT WHICH BUILD UP BEHIND DIKES MAY BE DISKED ONTO THE SITE BEFORE PLACEMENT OF TEMPORARY COVER. AFTER TEMPORARY COVER IS PLACED OR AFTER LANDSCAPING COMMENCES, SILT SHALL BE REMOVED AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER.
7. UNLESS LOCAL OR STATE REQUIREMENTS NECESSITATE MORE FREQUENT MONITORING, CONTRACTOR SHALL INSPECT EROSION CONTROL DEVICES EVERY 7 DAYS OR WITHIN 24 HOURS OF A STORM OF 0.5 INCHES OR MORE IN DEPTH (EXCLUSIVE OF HOLIDAYS). THE CONTRACTOR SHALL REPAIR DAMAGE, CLEAN OUT SEDIMENT, AND ADD ADDITIONAL CONTROL DEVICES AS NEEDED AS SOON AS POSSIBLE AFTER INSPECTION. DEFICIENCIES MUST BE CORRECTED WITHIN 7 DAYS.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY AND ALL FINES ASSOCIATED WITH EROSION CONTROL VIOLATIONS.

TEMPORARY STABILIZATION:

1. INITIATE THE INSTALLATION OF STABILIZATION MEASURES IMMEDIATELY IN ANY DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE OR WILL BE TEMPORARILY INACTIVE FOR 14 OR MORE CALENDAR DAYS ON ANY PORTION OF THE SITE.
2. TEMPORARY STABILIZATION SHALL INCLUDE TEMPORARY SEEDING, GEOTEXTILES, MULCHES, AND/OR OTHER TECHNIQUES TO REDUCE OR ELIMINATE EROSION UNTIL EITHER FINAL STABILIZATION CAN BE ACHIEVED OR UNTIL FURTHER CONSTRUCTION ACTIVITIES TAKE PLACE TO RE-DISTURB THIS AREA.
3. TEMPORARY STABILIZATION SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL AND STATE REQUIREMENTS.

FINAL STABILIZATION:

1. FINAL STABILIZATION SHALL BE INSTALLED IN ACCORDANCE WITH THE LANDSCAPE PLANS AND LOCAL AND STATE REQUIREMENTS.
2. CONTRACTOR SHALL MAINTAIN PERENNIAL VEGETATION UNTIL UNIFORM COVER IS ESTABLISHED. UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS, THIS SHALL INCLUDE A MINIMUM OF 70% COVERAGE AND NO BARE AREAS OF 10 SQUARE FEET OR MORE.

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE — RE: 18/C801
- RFL — REINFORCED SILT FENCE — RE: ODOT STD RSF-0
- SF — SILT FENCE — RE: 19/C801
- TEMPORARY SILT DIKE INLET PROTECTION — RE: 20/C801
- REMOVE TREE AND ROOTS TO 4" BELOW GRADE
- TREE PROTECTION — RE: LANDSCAPE

20 0 10 20
1" = 20'

811 Know what's below. Call before you dig.

CAUTION

NOTICE TO CONTRACTOR

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145 ARCHITECTS
STUDIO 145 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
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918.584.5858
oklahoma ca1460
exp: 6-30-27

City of Sapulpa

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
CONSTRUCTION DOCUMENTS

MARK	DESCRIPTION	DATE

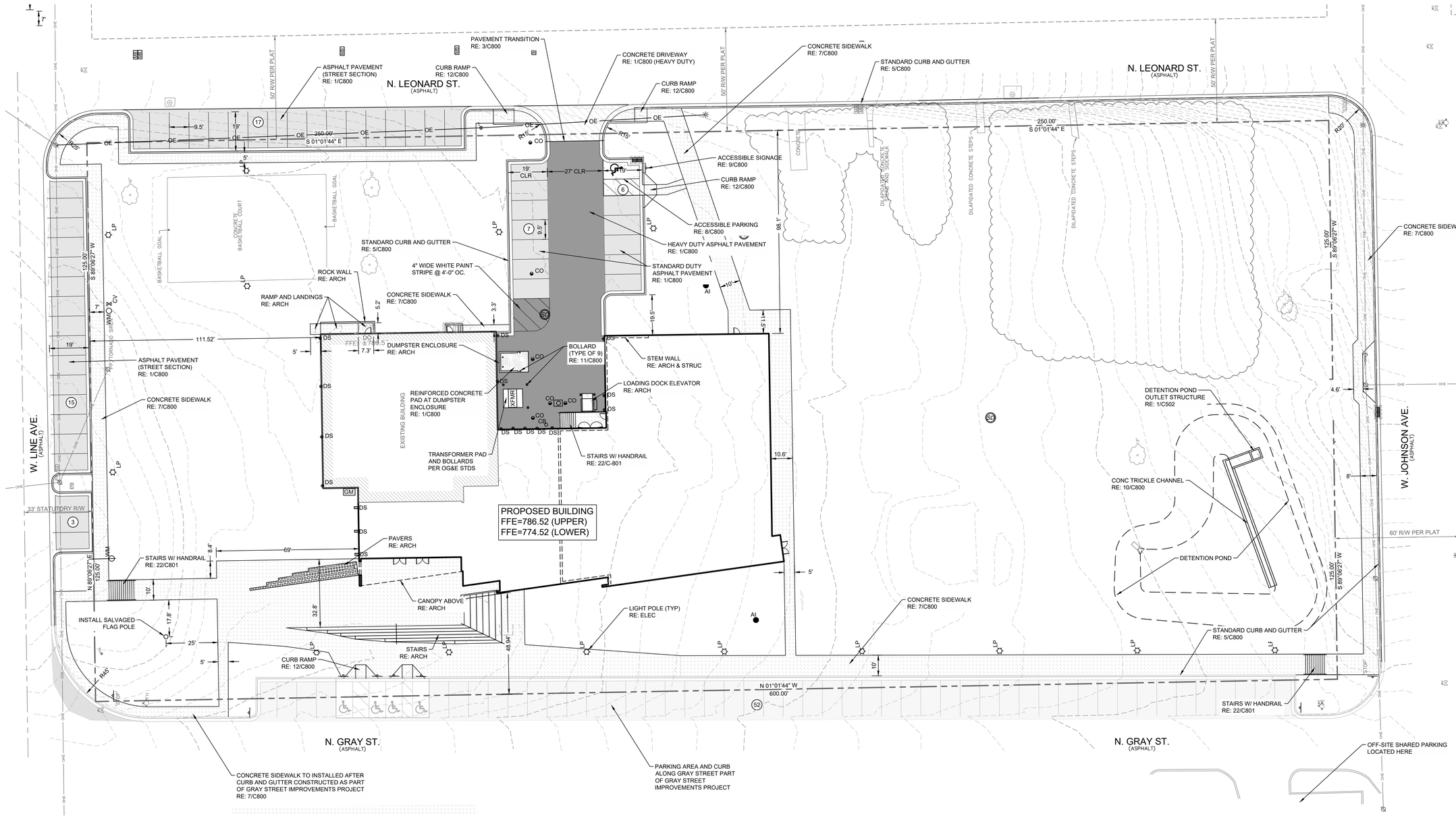
SCOTT M. RODEHAVER
18694
08/29/25

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

DEMOLITION AND EROSION CONTROL PLAN

C-300

\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 Demo & ECC.dwg PLOT:8/29/2025 5:22:29 PM ORIG SIZE:24"X36"



GENERAL SITE NOTES:

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL MUNICIPAL REGULATIONS AND CODES, WHICHEVER IS MORE STRINGENT.
2. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.H.A. STANDARDS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES' SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
4. REFER TO LANDSCAPE PLANS FOR GRASS, TREES, AND PLANTED MATERIALS.
5. ALL DIMENSIONS AND COORDINATES ARE FROM BACK OF CURB UNLESS SHOWN OTHERWISE.
6. RADII = 3'-00" UNLESS OTHERWISE INDICATED.

PARKING SUMMARY

REQUIRED PARKING:	
1 SPACE PER 200 SF: 22089 / 200 =	111
PROVIDED PARKING:	
ON-SITE	
STANDARD:	12
VAN ACCESSIBLE:	1
STREET PARKING	
STANDARD:	83
ACCESSIBLE:	3
VAN ACCESSIBLE:	1
OFF-SITE SHARED PARKING	38
TOTAL PROVIDED PARKING:	138

GENERAL PAVING NOTES:

1. ALL MATERIALS, EXECUTION, AND TESTING TO CONFORM TO AHJ REQUIREMENTS (I.E. LOCAL OR STATE DOT STANDARDS AND SPECIFICATIONS).
2. ALL PAVING AND EARTHWORK OPERATIONS SHALL CONFORM TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.
3. CONTRACTOR TO PROVIDE PRODUCT DATA SUBMITTALS INCLUDING, BUT NOT LIMITED TO, DESIGN MIXES, MATERIAL CERTIFICATES, AND MATERIAL TEST REPORTS FOR MATERIALS AND PRODUCTS ASSOCIATED WITH PAVING AND PAVEMENT MARKING OPERATIONS.
4. CONTRACTOR SHALL DEVELOP AND IMPLEMENT PROPER TRAFFIC CONTROL IN CONFORMANCE WITH THE LATEST REVISION OF THE MUTCD. ACCESS FOR EMERGENCY VEHICLES AND LOCAL TRAFFIC SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
5. PAVEMENT SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND TO THE GRADES AND ELEVATIONS REQUIRED BY THE CONSTRUCTION DOCUMENTS.
6. PAVEMENT CONTRACTOR TO INSPECT PAVEMENT SUBGRADE AND CORRECT ANY DEFICIENCIES PRIOR TO PAVING OPERATIONS.
7. CONTRACTOR TO COORDINATE CONSTRUCTION TESTING UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
8. THE PAVEMENT SECTIONS SHOWN IN DETAIL 1/C800 ARE SHOWN FOR REFERENCE AND WERE PROVIDED BY AIMRIGHT TESTING & ENGINEERING BASED ON SITE SPECIFIC CONDITIONS AS OUTLINED IN THEIR REPORT DATED APRIL 11, 2024. ANY QUESTIONS REGARDING THE SUITABILITY OF THESE OR ALTERNATE PAVEMENTS SECTIONS, SPECIFIC PAVEMENT MAINTENANCE REQUIREMENTS, OR POTENTIAL PAVEMENT LIFE SHOULD BE DIRECTED TO AIMRIGHT TESTING & ENGINEERING, AS THIS IS BEYOND WALLACE'S SCOPE OF SERVICES FOR THIS PROJECT.

ASPHALT PAVEMENT:

9. CONSTRUCT JOINTS TO ENSURE A CONTINUOUS BOND BETWEEN ADJOINING PAVEMENT SECTIONS. OFFSET LONGITUDINAL JOINTS, IN SUCCESSIVE COURSES, A MINIMUM OF 6 INCHES AND TRANSVERSE JOINTS A MINIMUM OF 24 INCHES.
10. WHERE DIFFERENT THICKNESS PAVEMENTS ABUT, PROVIDE A THICKENED EDGE ON THE THINNER PAVEMENT SECTION, WHICH TRANSITIONS TO THE THICKER PAVEMENT DEPTH ACROSS FOUR FEET.
11. UNIFORM DENSITY REQUIREMENTS:
    - 11.1. AVERAGE DENSITY: 96 PERCENT OF REFERENCE LABORATORY DENSITY ACCORDING TO ASTM D 6927 BUT NOT LESS THAN 94 PERCENT OR GREATER THAN 100 PERCENT, OR
    - 11.2. AVERAGE DENSITY: 92 PERCENT OF REFERENCE MAXIMUM THEORETICAL DENSITY ACCORDING TO ASTM D 2041 BUT NOT LESS THAN 90 PERCENT OR GREATER THAN 96 PERCENT.
12. INSTALLATION TOLERANCES:
    - 12.1. PAVEMENT THICKNESS: BASE COURSE PLUS OR MINUS 1/2 INCH; SURFACE PLUS 1/4 INCH.
    - 12.2. PAVEMENT SMOOTHNESS: BASE COURSE 1/4 INCH IN 10 FEET; SURFACE COURSE 1/8 INCH IN 10 FEET.

CONCRETE PAVEMENT:

13. CONCRETE PLACEMENT TO CONFORM TO ACI 301 / 306 / 330 REQUIREMENTS.
14. CONCRETE MATERIAL:
    - 14.1. 28 DAY COMPRESSIVE STRENGTH: 4000 PSI MINIMUM
    - 14.2. MAXIMUM W/C RATIO AT POINT OF PLACEMENT: 0.45
    - 14.3. SLUMP: 3 INCHES PLUS OR MINUS 1 INCH
    - 14.4. AIR CONTENT: 6 PERCENT PLUS OR MINUS 1-1/2 PERCENT
15. STEEL:
    - 15.1. GRADE 60
    - 15.2. COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATION, PLACEMENT, AND SUPPORT.
16. JOINTS:
    - 16.1. FORM CONSTRUCTION, ISOLATION, AND CONTRACTION JOINTS WITH FACES PERPENDICULAR TO SURFACE PLANE OF CONCRETE. WHEN JOINING EXISTING PAVING, PLACE JOINTS TO ALIGN WITH PREVIOUSLY PLACED JOINTS UNLESS OTHERWISE INDICATED.
    - 16.2. FORM ISOLATION JOINTS OF PREFORMED JOINT-FILLER STRIPS ABUTTING LIGHT STANDARD FOUNDATIONS, MANHOLES, INLETS, STRUCTURES, OR OTHER FIXED OBJECTS. EXTEND JOINT FILLERS THE FULL WIDTH AND DEPTH OF PAVEMENT.
    - 16.3. CONTRACTION JOINT DEPTH TO BE 1/4 OF THE TOTAL CONCRETE THICKNESS.
    - 16.4. JOINTS SHOULD EXTEND THROUGH ADJACENT CURB AND GUTTER.
17. JOINT SPACING
    - 17.1. JOINT SPACING SHALL NOT EXCEED 24 TO 30 TIMES THE PAVEMENT THICKNESS (E.G. 0.5' THICK CONCRETE x 30 = 15' MAXIMUM JOINT SPACING) WITH A MAXIMUM SPACING OF 15 FEET.
    - 17.2. LAY OUT JOINTS TO FORM SQUARE PANELS. WHEN THIS IS NOT PRACTICAL, RECTANGULAR PANELS CAN BE USED, BUT THE LENGTH SHALL NOT BE MORE THAN 25% LONGER THAN THE WIDTH (E.G. A 15' LONG PANEL CANNOT BE WIDER THAN 12').
    - 17.3. CONTRACTOR TO SUBMIT A JOINT LAYOUT PLAN FOR REVIEW AND APPROVAL PRIOR TO COMMENCING PAVING OPERATIONS. CONTRACTOR TO TAKE INTO ACCOUNT REVIEW TIME AND CHANGES PER ANY COMMENTS WHEN SCHEDULING THE SUBMISSION OF THE JOINT LAYOUT PLAN.
18. REINFORCEMENT OF IRREGULARLY SHAPED PANELS OR MISMATCHED JOINTS
    - 18.1. ON PANELS WITH RADII, ON PANELS THAT TAPER TO A SHARP ANGLE, AND/OR WHEN THE LENGTH TO WIDTH RATIO EXCEEDS 1.25, PROVIDE A MINIMUM OF 0.05 PERCENT STEEL IN BOTH DIRECTIONS ACROSS THE ENTIRE PANEL.
    - 18.2. WHERE JOINT PATTERNS OF ABUTTING PAVEMENTS DO NOT MATCH AND ARE NOT SEPARATED BY AN EXPANSION JOINT, PROVIDE A MINIMUM OF 0.05 PERCENT STEEL IN THE PAVEMENT OPPOSITE OF THE MISMATCHED JOINT FOR A DISTANCE OF THREE FEE BACK FROM THE JOINT ALONG THE FULL WIDTH OF THE PANEL.
19. WHERE DIFFERENT THICKNESS PAVEMENTS ABUT, PROVIDE A THICKENED EDGE ON THE THINNER PAVEMENT SECTION WHICH TRANSITIONS TO THE THICKER PAVEMENT DEPTH ACROSS FOUR FEET.
20. PROVIDE MEDIUM TO FINE TEXTURED BROOM FINISH UNLESS OTHERWISE INDICATED ON THE PLANS.
21. INSTALLATION TOLERANCES
    - 21.1. ELEVATION: 1/4 INCH
    - 21.2. THICKNESS: PLUS 3/8 INCH, MINUS 1/4 INCH
    - 21.3. SURFACE: 1/4 INCH IN 10 FEET

PAVEMENT MARKINGS:

22. ALLOW PAVING TO AGE A MINIMUM OF 30 DAYS BEFORE STARTING PAVEMENT MARKING OPERATIONS.
23. PAVEMENT MARKING PAINT SHALL BE ACRYLIC, WATERBORNE EMULSION, LEAD AND CHROMATE FREE, READY MIXED, COMPLYING WITH FS TT-P-1952, TYPE II, WITH A DRYING TIME OF LESS THAN THREE MINUTES.
24. COLOR AS INDICATED.

LEGEND

- HEAVY DUTY ASPHALT PAVEMENT RE: 1/C800
- STANDARD DUTY ASPHALT PAVEMENT RE: 1/C800
- STANDARD DUTY CONCRETE RE: 1/C800
- REINFORCED CONCRETE PAD RE: 1/C800
- CONCRETE SIDEWALK RE: 7/C800

20 0 10 20
1" = 20'

Know what's below. Call before you dig.

CAUTION

NOTICE TO CONTRACTOR

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STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

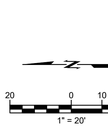
wallace design collective
wallace design collective, pc
structural civil landscape survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma coa1460
exp: 6-30-27

City of Sapulpa

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA

CONSTRUCTION DOCUMENTS

MARK	DESCRIPTION	DATE



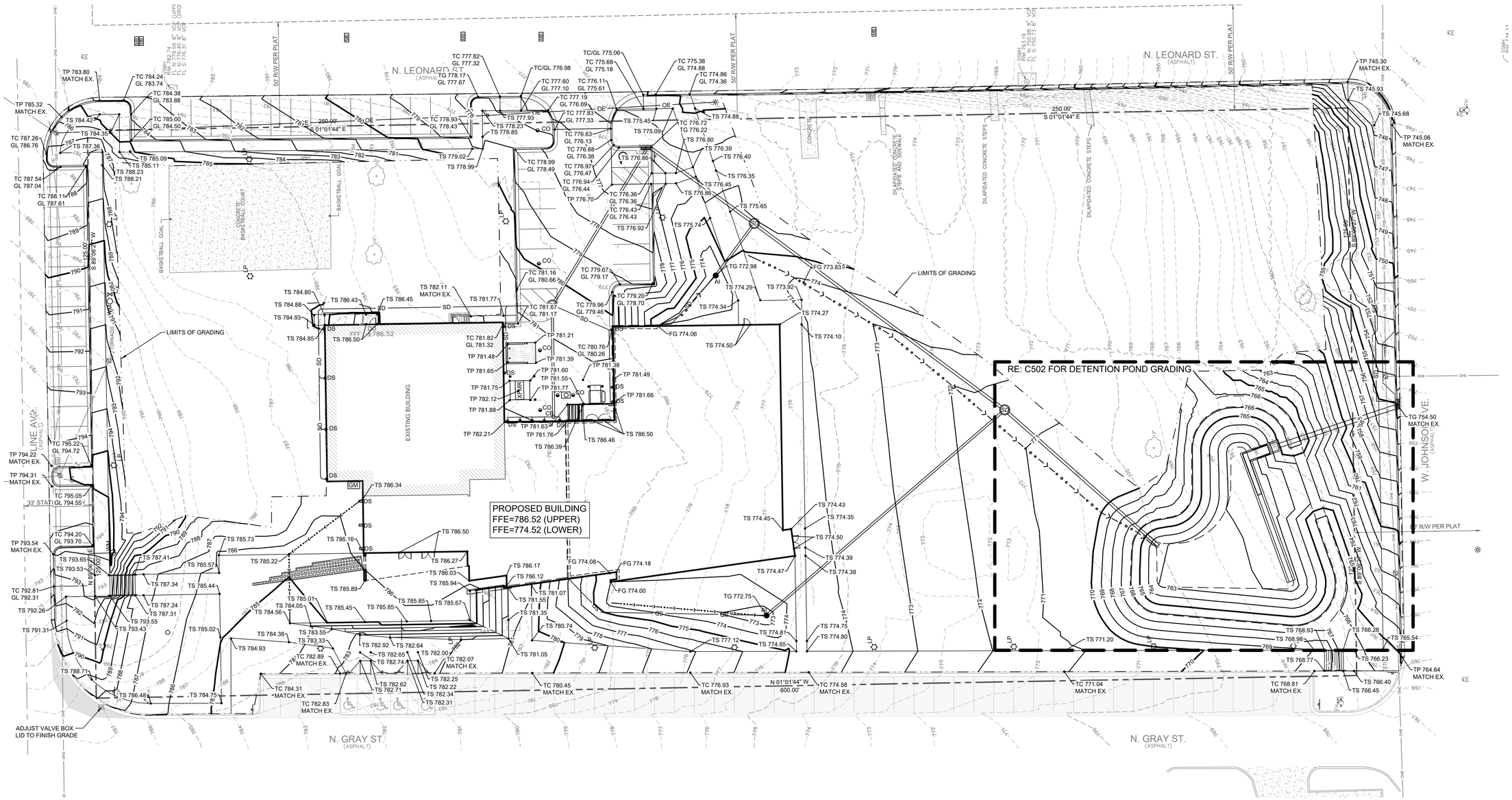
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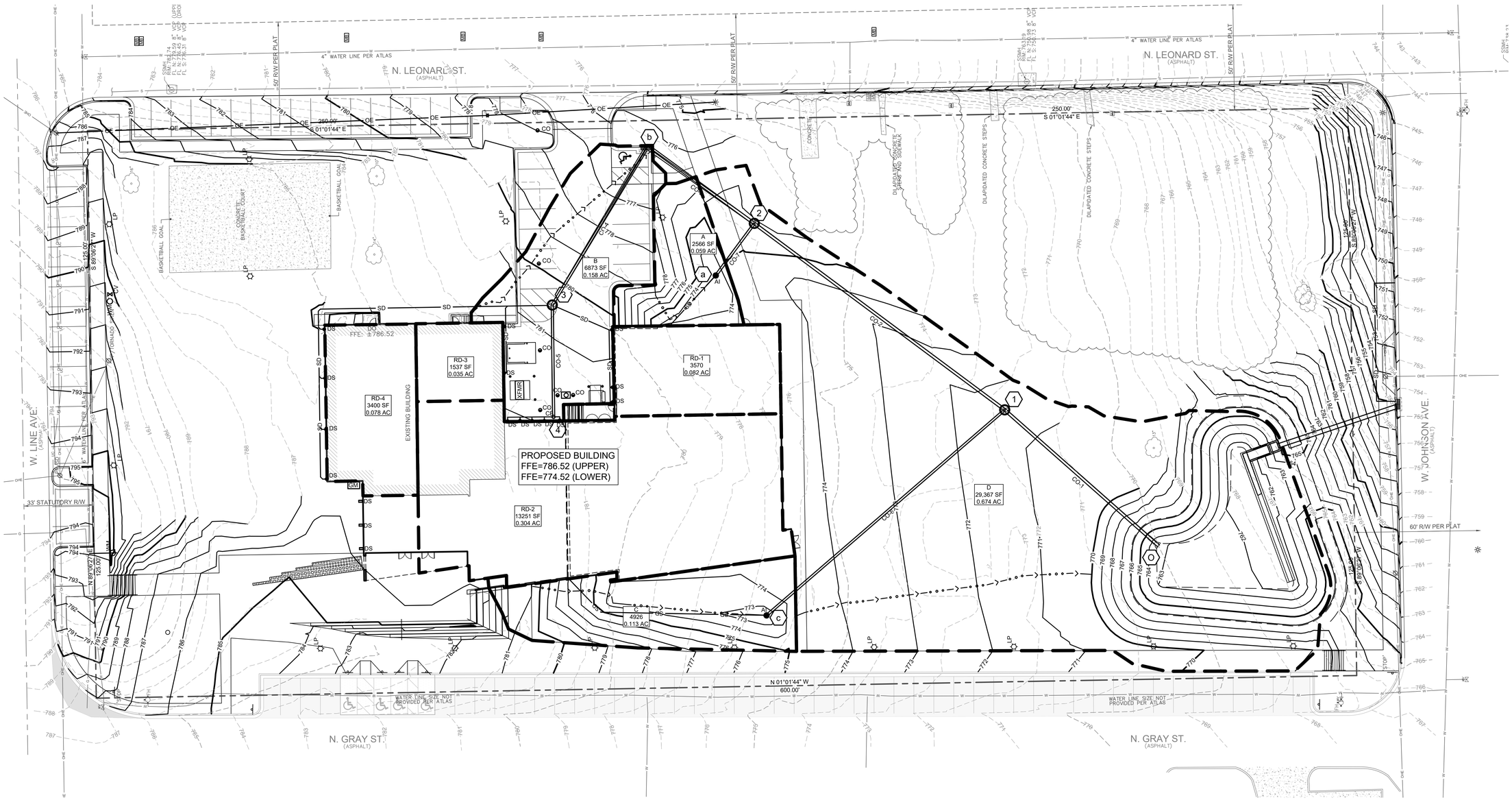
PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

SITE PLAN

C-400

PLOT:9/4/2025 10:23:39 AM ORIG SIZE:24"X36"
\\civil-server\Projects\2430428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2430428 Site.dwg


N. LEONARD ST.
(ASPHALT)
50' R/W PER PLAT
250.00'
S 01°01'44" E
DILAPIDATED CONCRETE STEPS
DILAPIDATED CONCRETE & BRICK WALK AND SIDEWALK
CONCRETE
LIMITS OF GRADING
RE: C502 FOR DETENTION POND GRADING
PROPOSED BUILDING
FFE=786.52 (UPPER)
FFE=774.52 (LOWER)
EXISTING BUILDING
CONCRETE BASKETBALL COURT
BASKETBALL GOAL
S 89°06'02" W
125.00'
N 89°06'02" E
125.00'
N 01°01'44" W
600.00'
LINE AVE.
(ASPHALT)
W. JOHNSON AVE.
(ASPHALT)
N. GRAY ST.
(ASPHALT)
50' R/W PER PLAT
ADJUST VALVE BOX LID TO FINISH GRADE
TP 783.80 MATCH EX.
TP 785.32 MATCH EX.
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INLET DESIGN TABLE (RATIONAL)

DRAINAGE AREA BASIN	INLET NO.	DRAINAGE AREA (SF)	DRAINAGE AREA (ACRES)	PAVED AREA (SF)	GRASS AREA (SF)	RATIONAL "C"	REACH GRASS (FEET)	SLOPE GRASS (%)	VELOCITY GRASS (FPS)	REACH PAVING (FEET)	SLOPE PAVING (%)	VELOCITY PAVING (FPS)	REACH GRASSED WATERWAY (FT)	SLOPE GRASSED WATERWAY (%)	VELOCITY GRASSED WATERWAY (FPS)	TOTAL Tc (MIN)	I 100 (INHR)	Q 100 (CFS)	% SLOPE AT INLET	SUM Q 100 AT INLET (CFS)	Q 100 INLET (FEET)	MAX DEPTH AT INLET (FEET)	INLET MAX CAPACITY (CFS)	Q 100 BYPASS (CFS)	TO STRUCTURE	CLOGGING FACTOR	INLET DESIGN
A	a	2,566	0.06	0	2,566	0.40	19	27.6%	3.66	-	-	-	34.70	0.03	2.71	0.3	13.5	0.32	sump	0.32	0.16	0.50	0.72	0.00		0.50	Area Drain Round 12"
B	b	6,873	0.16	6,608	265	0.93	28	3.7%	1.34	91	4.2%	4.15	-	-	-	0.7	13.3	1.94	sump	1.94	0.30	0.50	3.58	0.00		0.70	Single Grate Design 1
C	c	4,926	0.11	388	4,538	0.44	42	18.2%	2.97	-	-	-	71.50	0.01	1.76	0.9	13.1	0.66	sump	0.66	0.42	0.50	0.72	0.00		0.50	Area Drain Round 12"
D		29,367	0.67	2,300	27,067	0.44	142	3.3%	1.27	-	-	-	-	-	-	1.9	12.5	3.74	sump	3.74	0.48	0.50	3.83	0.00		0.50	Detention Pond
RD-1	1	3,570	0.08	3,570	0.00	0.95	-	-	-	-	-	-	-	-	-	0.7	13.2	1.03	sump	1.03	-	-	-	-		-	Roof Drain
RD-2	2	13,251	0.30	13,251	0.00	0.95	-	-	-	-	-	-	-	-	-	0.0	13.7	3.97	sump	3.97	-	-	-	-		-	Roof Drain
RD-3	3	1,537	0.04	1,537	0.00	0.95	-	-	-	-	-	-	-	-	-	0.7	13.2	0.44	sump	0.44	-	-	-	-		-	Roof Drain
RD-4	4	3,400	0.08	3,400	0.00	0.95	-	-	-	-	-	-	-	-	-	0.2	13.6	1.01	sump	1.01	-	-	-	-		-	Roof Drain

PIPE DESIGN TABLE

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (ft)	Slope (%)	Section Type	Material	Manning's n	Diameter (in)	Flow (Maximum) (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Time (Maximum Flow) (min)
CO-1	1	767.00	O	763.10	97.6	4.0	Circle	HP	0.012	15	8.78	13.99	7.81	764.00	771.38	767.72	766.11	769.96	766.90	714
CO-2	2	770.00	1	767.00	148.5	2.0	Circle	HP	0.012	15	7.84	9.95	8.96	771.38	775.87	770.84	767.82	772.09	769.13	714
CO-3	b	773.00	2	770.00	63.1	4.8	Circle	HP	0.012	15	7.35	15.26	11.87	775.87	776.26	773.62	770.90	775.94	771.83	714
CO-4	3	776.00	b	773.25	87.4	3.1	Circle	HP	0.012	12	5.58	6.85	9.68	776.26	780.58	776.69	773.92	778.15	775.45	714
CO-5	4	778.00	3	776.00	53.3	3.8	Circle	HP	0.012	12	3.51	7.48	9.20	780.58	781.83	778.49	776.88	779.83	777.24	714
CO-6	c	770.00	1	768.51	149.7	1.0	Circle	HP	0.012	12	1.12	3.85	4.15	771.38	772.75	770.38	768.88	770.65	769.15	714
CO-7	a	771.00	2	770.00	30.8	3.2	Circle	HP	0.013	12	0.58	6.42	2.43	775.87	773.00	771.21	770.84	771.52	770.85	714

20 0 10 20
1" = 20'

811 Know what's below. Call before you dig.

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CITY OF SAPULPA

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
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MARK	DESCRIPTION	DATE

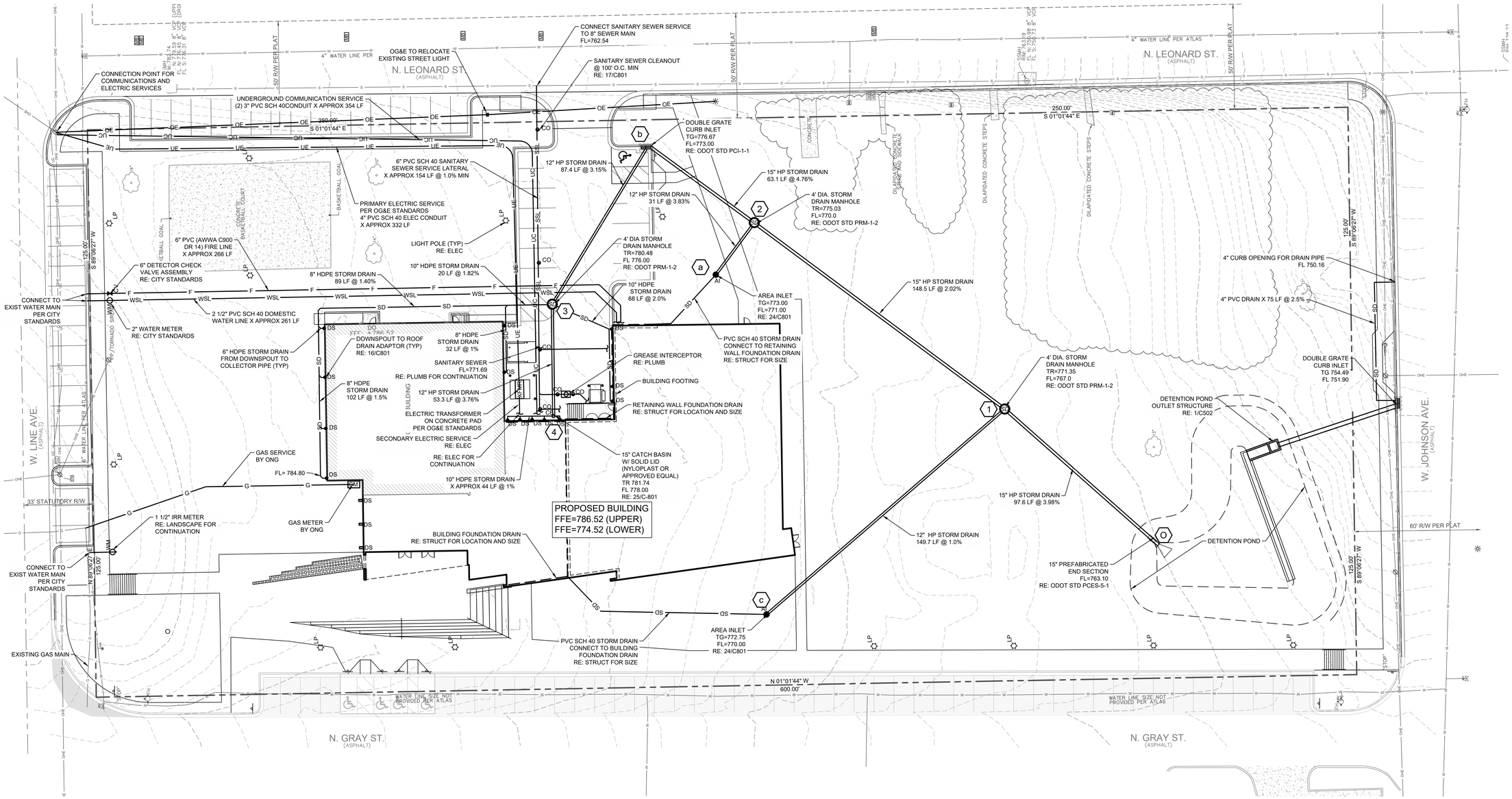
OKLAHOMA LICENSED PROFESSIONAL ENGINEER
SCOTT M. RODEHAVER
18694
9/04/25

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

DRAINAGE MAP

C-501

\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 Drainage.dwg PLOT:9/4/2025 10:23:52 AM ORG SIZE:24"X36"



GENERAL UTILITY NOTES:

1. PRIOR TO CONSTRUCTION, LOCATION OF SITE UTILITIES SHALL BE VERIFIED BY CONTRACTOR WITH THE PROPER UTILITY COMPANY PROVIDING SERVICE. SERVICE LINES SHOWN FOR COORDINATION AND REFERENCE ONLY. CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS (TELECOMMUNICATIONS, ELECTRIC, GAS, ETC.) PRIOR TO INSTALLING SERVICE LINES OR APPURTENANCES. CONTRACTOR IS TO COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
2. THIS PLAN DEPICTS THE INTENT OF PRIVATE AND FRANCHISE UTILITY ROUTINGS AS UNDERSTOOD DURING DESIGN PHASES OF THE PROJECT. IT IS THE OWNER/DEVELOPER'S RESPONSIBILITY TO NEGOTIATE ALL CONTRACTS FOR SERVICE WITH EACH INDIVIDUAL UTILITY COMPANY AND TO PROVIDE THE ENGINEER WITH ANY DOCUMENTS THAT MAY AFFECT THE LAYOUT.
3. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES' INSPECTORS BEFORE CONNECTING TO ANY EXISTING LINE IN ACCORDANCE WITH LOCAL REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE SPECIFICATIONS OF THE LOCAL AUTHORITIES REGARDING TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
5. NOT ALL EXISTING UNDERGROUND UTILITIES MAY BE SHOWN ON THIS PLAN. THE EXACT LOCATIONS AND NOTIFICATIONS OF THE PROPER AGENCY ARE THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO CONSTRUCTION.
6. RESTRAINED JOINTS SHALL BE PROVIDED ON 4" AND LARGER WATER LINES AT ALL BENDS TEES AND FIRE HYDRANTS FOR A MINIMUM 2 JOINTS BOTH SIDES OF FITTING PER AWWA MINIMUM STANDARDS.
7. CONTRACTOR SHALL REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING PLANS FOR PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS. TERMINATE SERVICE PIPING 5' FROM BUILDING WALL UNTIL BUILDING PIPING SYSTEMS ARE INSTALLED. TERMINATE PIPING WITH VALVE AND CAP PLUG OR FLANGE AS REQUIRED FOR PIPING MATERIAL. MAKE CONNECTIONS TO BUILDING PIPING SYSTEMS WHEN THOSE SYSTEMS ARE INSTALLED.
8. REFER TO PLUMBING AND/OR FIRE PROTECTION SHEETS FOR FIRE LINE LEAD-IN LOCATION AND DETAIL. CONTRACTOR SHALL UTILIZE AWWA AND FACTORY MUTUAL TEST AND CERTIFICATIONS FOR ALL UNDERGROUND FIRE PROTECTION LINES AS A MINIMUM. LOCAL OR STATE AUTHORITIES MAY REQUIRE MORE STRINGENT TESTING WHICH SHALL BE PROVIDED BY THE GC IF REQUIRED.
9. FIRE LINE BACKFLOW PREVENTER (DOUBLE CHECK ASSEMBLY) SHALL BE LOCATED INSIDE THE BUILDING.
10. ALL PIPING SHALL BE INSTALLED WITH A MINIMUM OF 30" OF COVER, UNLESS NOTED OTHERWISE. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS. UTILITY TRENCH DETAIL RE: 14/C801. STORM TRENCH DETAIL RE: 15/C801.
11. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING FOR CONTINUATION OF UTILITIES AT BUILDING.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL CONDUITS (INCLUDING IRRIGATION SLEEVES) PRIOR TO PAVING WHETHER OR NOT SHOWN ON CIVIL PLANS. THE CONTRACTOR SHALL INSTALL ALL CONDUITS WITH A PULL STRING. ALL CONDUIT SHALL BE SCH. 40 PVC, UNLESS NOTED OTHERWISE.
13. CONSTRUCT CLAY TRENCH PLUG THAT EXTENDS AT LEAST 5 FEET OUT FROM THE FACE OF THE BUILDING EXTERIOR. THE PLUG MATERIAL SHALL CONSIST OF CLAY COMPACTED AT A WATER CONTENT AT OR ABOVE THE SOIL'S OPTIMUM WATER CONTENT. THE CLAY FILL SHALL BE PLACED TO COMPLETELY SURROUND THE UTILITY LINE AND BE COMPACTED TO AT LEAST 95% STANDARD PROCTOR DENSITY.
14. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
15. ALL STORM PIPE ENTERING CONCRETE STRUCTURES SHALL BE GROUTED WITH NON SHRINK GROUT TO ASSURE CONNECTION AT STRUCTURE IS WATER TIGHT.
16. PROVIDE SLEEVE WITH LINK-SEAL (OR APPROVED EQUAL) AT GRADE BEAM PENETRATION LOCATIONS (RE: STRUCTURAL FOR DETAIL).
17. CONTRACTOR SHALL REFER TO ELECTRICAL SITE PLAN OR PHOTOMETRIC PLAN (BY OTHERS) FOR ALL SITE LIGHTING CONSTRUCTION DETAILS, REQUIREMENTS, AND FINAL POLE LOCATIONS. POLE LOCATIONS ARE SHOWN ON THIS SHEET FOR REFERENCE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ADJUSTMENTS TO POLE LOCATIONS AS NECESSARY TO AVOID OBSTRUCTIONS (I.E., UNDERGROUND UTILITIES, SIDEWALKS, ETC...). CONTRACTOR SHALL POT HOLE EACH LOCATION WHERE A NEW LIGHT POLE IS TO BE PLACED PRIOR TO CONSTRUCTION TO VERIFY THERE ARE NO CONFLICTS WITH EXISTING UTILITIES. IF DAMAGES OCCUR TO EXISTING UTILITIES THEY WILL REPLACE OR REPAIR AT THEIR OWN EXPENSE. POLE LOCATIONS MAY NOT BE ADJUSTED WITHOUT PRIOR APPROVAL FROM THE ENGINEERS SINCE A CHANGE IN LOCATION CAN IMPACT THE INTENDED PHOTOMETRIC DESIGN.
18. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF PROPOSED SIGN(S) AND INSTALLATION OF SECURITY CAMERAS WITH OWNER'S CONSTRUCTION MANAGER. COORDINATE WITH ELECTRICAL SITE PLAN TO PROVIDE ALL CONDUIT NEEDED FOR DATA AND/OR POWER TO SITE SIGN(S), SECURITY CAMERAS, AND LIGHT POLES.

GENERAL STORM SEWER NOTES

1. ALL PIPING SHALL BE INSTALLED WITH A MINIMUM OF 30" OF COVER, UNLESS NOTED OTHERWISE. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS. UTILITY TRENCH DETAIL RE: 14/C801. STORM TRENCH DETAIL RE: 15/C801.
2. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
3. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED WITH NON SHRINK GROUT TO ASSURE CONNECTION AT STRUCTURE IS WATER TIGHT.
4. ALL STORM SEWER SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT CITY STANDARD CONSTRUCTION SPECIFICATIONS.
5. THE CONTRACTOR SHALL VERIFY UTILITY LOCATIONS BEFORE EXCAVATING.
6. THE CONTRACTOR SHALL NOTIFY THE CITY PUBLIC WORKS DEPARTMENT AT LEAST 24 HOURS PRIOR TO START OF CONSTRUCTION.
7. MANHOLES AND APPURTENANCE DETAILS SHALL BE APPROVED BY THE PUBLIC WORKS DIRECTOR BEFORE CONSTRUCTION IS STARTED.
8. ALL STORM SEWER MAIN PIPE SHALL BE HIGH-DENSITY POLYETHYLENE (HP), ADS N-12, OR EQUIVALENT, CORRUGATED, SMOOTH INTERIOR PLASTIC PIPE.
9. ALL STORM SEWER PIPE AND FITTINGS TO INTERIOR AREA INLETS SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35, SOLID WALL PLASTIC PIPE.
10. IF REINFORCED CONCRETE PIPE (RCP) IS USED, IT SHALL CONFORM TO ASTM C-76 CLASS III, WALL "B", UNLESS OTHERWISE NOTED. OMNI-FLEX JOINTS SHALL BE REQUIRED ON ALL REINFORCED CONCRETE PIPE.
11. STORM SEWER BEDDING, BACKFILL, AND COMPACTION SHALL BE IN ACCORDANCE WITH CITY STANDARD DRAWINGS.
12. ALL STORM SEWER LINES NOT UNDER PAVING SHALL BE LAID IN TYPE A AGGREGATE BEDDING TO A MINIMUM DEPTH OF 12 INCHES ABOVE THE TOP OF PIPE. THE TRENCH MAY BE BACKFILLED WITH COMPACTED SOIL UPON APPROVAL BY THE INSPECTOR.
13. STORM SEWER LINES LOCATED UNDER PAVED STREETS SHALL BE LAID IN TYPE A AGGREGATE BEDDING AND THE TRENCH COMPLETELY FILLED TO SUBGRADE WITH TYPE A AGGREGATE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
14. PIPE BACKFILL SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES, AND COMPACTED BY VIBRATORY PLATE OR OTHER METHOD APPROVED BY THE ENGINEER.
15. PAVING SUBGRADE SHALL BE RESTORED TO PROPER GRADE (+ OR - 0.1 FT) AND DENSITY AFTER PIPE IS BACKFILLED.
16. ALL PRECAST MANHOLES SHALL HAVE ADJUSTABLE TOP RIMS PROVIDING SIX (6) INCHES, PLUS OR MINUS, FOR ADJUSTMENT TO FINAL GRADES. ELEVATIONS SHOWN ON PLANS MAY BE ADJUSTED WHILE THE WORK IS IN PROGRESS TO CONFORM TO FINAL IN-PLACE PAVING AND LANDSCAPE GRADES.
17. THE UTILITY CONTRACTOR ASSUMES THE RISK OF ORDERING PRECAST CONCRETE COMPONENTS PRIOR TO FIELD STAKING AND REVIEW OF FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.
18. VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL DISTURBED AREAS AS SOON AS THE WORK IS COMPLETED.

NOTE: ALL STORM SEWER IS PUBLIC UNLESS OTHERWISE NOTED HEREIN.

20 0 10 20
1" = 20'

Know what's below. Call before you dig.

CAUTION
NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES.

STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

wallace design collective
wallace design collective, pc
structural civil landscape survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma ca1460
exp: 6-30-27

city of Sapulpa

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
CONSTRUCTION DOCUMENTS

MARK	DESCRIPTION	DATE

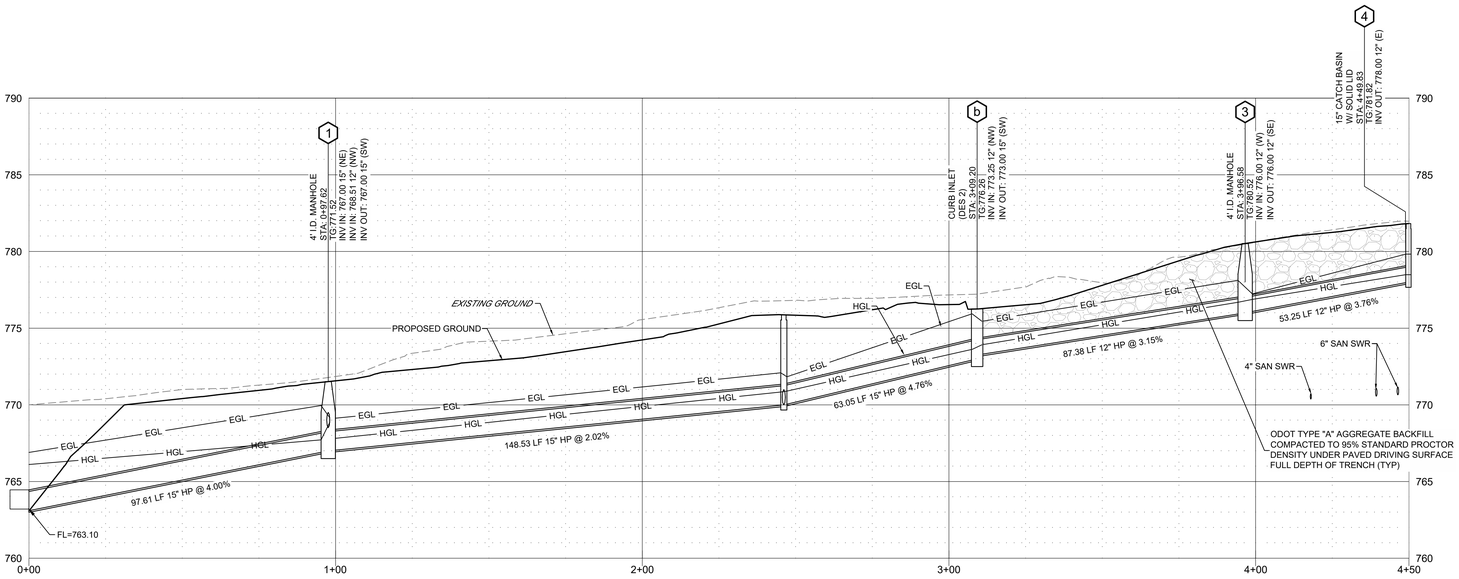
PROFESSIONAL ENGINEER
SCOTT M. RODEHAVER
18694
OKLAHOMA
9/04/25

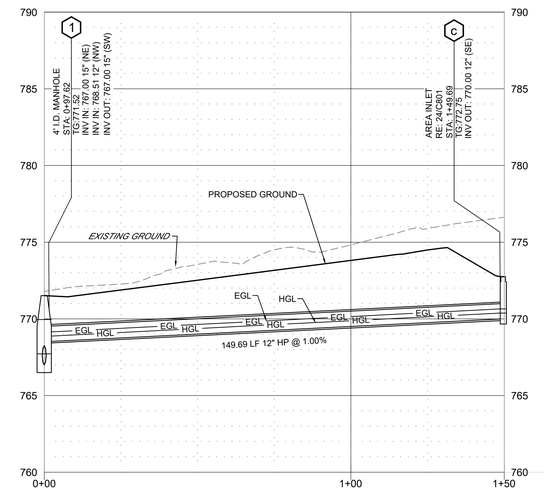
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ISSUE DATE: 09/03/2025

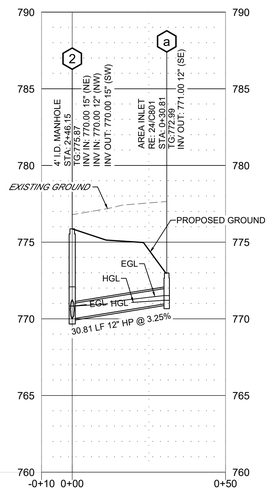
UTILITY PLAN

C-600

\\civil-server\Projects\2430428 Booker T Washington Recreation Center\Dwgs\PRODUCTION\2430428 Utility.dwg PLOT:9/4/2025 11:58:41 AM ORIG SIZE:24"X36"







20 0 10 20
1" = 20'

811 Know what's below. Call before you dig.

CAUTION
NOTICE TO CONTRACTOR

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City of Sapulpa

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LICENSED PROFESSIONAL ENGINEER
SCOTT M. RODEHAVER
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08/29/25

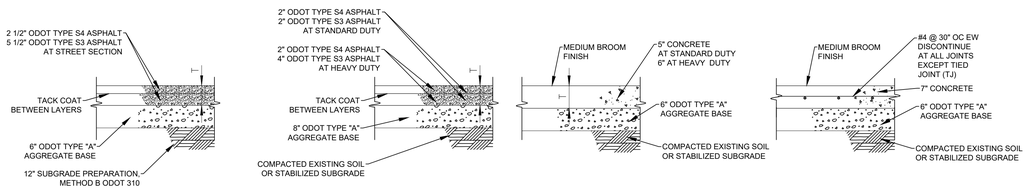
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ISSUE DATE: 09/03/2025

PROFILES

C-700

\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 Profiles.dwg PLOT:8/29/2025 5:22:56 PM ORIG SIZE:24"X36"

REFER TO PAVEMENT REQUIREMENTS AND PAVEMENT JOINT DETAILS FOR ADDITIONAL REQUIREMENTS



ASPHALT PAVEMENT (STREET SECTION) | ASPHALT PAVEMENT | CONCRETE PAVEMENT | REINFORCED DUMPSTER PAD

1 TYPICAL PAVEMENT SECTIONS
SCALE: NTS

8" SCARIFY AND RECOMPACT SUBGRADE TO 95% STANDARD PROCTOR DENSITY
STABILIZE SUBGRADE WITH HYDRATED LIME (OPTIONAL)
ENGINEERED FILL SPECIFICATIONS 1. PLASTICITY INDEX (PI) MAXIMUM OF 18 2. LIQUID LIMIT (LL) MAXIMUM OF 40 3. SHALL NOT CONTAIN ROCK FRAGMENTS GREATER THAN 1.5 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION, AND OTHER DELETERIOUS MATTER. 4. PRIOR TO ANY FILLING OPERATIONS, SAMPLES WILL NEED TO BE TESTED BY AND APPROVED BY GEOTECH ENGINEER.
AGGREGATE BASE TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY

SUBGRADE AND AGG BASE

MIX THICKNESS TABLE

ASPHALT MIX (ODOT)	MIN LIFT THICKNESS	MAX LIFT THICKNESS
S3 (BASE ONLY)	3"	5"
S4	2"	3.5"*
S5	1"	2.5"
TYPE A (BASE ONLY)	3"	5"
TYPE B	2"	3.5"*
TYPE C	1"	2.5"

*SHALL NOT EXCEED 2.5" FOR A SURFACE COURSE PLACEMENT

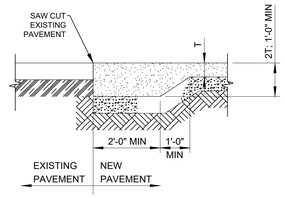
ASPHALT PAVEMENT

COMPRESSIVE STRENGTH (28 DAYS): 4000PSI
WATER-CEMENTITIOUS RATIO AT POINT OF PLACEMENT: 0.45
SLUMP LIMIT: 3" PLUS OR MINUS 1"
AIR CONTENT: 6 PERCENT PLUS OR MINUS 1-1/2 PERCENT
CALCIUM CHLORIDE SHALL NOT BE PERMITTED IN CONCRETE MIXTURES
CHEMICAL ADMIXTURES TO MEET DOT SPECS FOR HIGHWAY CONSTRUCTION
CEMENTITIOUS MATERIALS TO CONFORM TO THE DOT SPECIFICATION FOR HIGHWAY CONSTRUCTION; LIMIT PERCENTAGE BY WEIGHT OF CEMENTITIOUS MATERIAL OTHER THAN PORTLAND CEMENT ACCORDING TO ACI 301 REQUIREMENTS

CONCRETE PAVEMENT AND SIDEWALKS

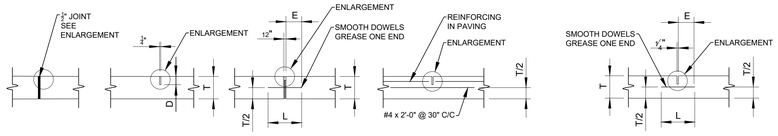
2 TYPICAL PAVEMENT REQUIREMENTS
SCALE: NTS

RE: PAVEMENT SECTIONS FOR THICKNESS "T"
AT CONCRETE TO CONCRETE TRANSITIONS, USE A CONSTRUCTION JOINT IN LIEU OF THIS DETAIL



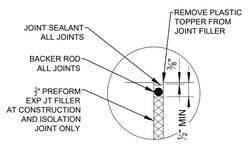
3 ASPHALT PAVEMENT TRANSITION
SCALE: NTS

1. JOINTS NOT SHOWN OTHERWISE SHALL BE SAW JOINTS. SAW JOINTS SHALL BE MADE WITHIN 10 HOURS AFTER CONCRETE POUR.
2. CONCRETE PAVING JOINT SPACING, SEE SCHEDULE.
3. LENGTH <= 1.25 W. RE: SHEET NOTES FOR ADDITIONAL JOINT INFORMATION.
4. ALL DOWELS AND BARS TO BE EPOXY COATED. DOWEL BASKETS SHALL BE USED AT ALL DOWELED CONTRACTION JOINTS.
5. ISOLATION JOINTS REQUIRED WHERE CONCRETE ABUTS CURBS, CATCH BASINS, MANHOLES, INLETS, STRUCTURES, OTHER FIXED OBJECTS, OR EXISTING PAVEMENT



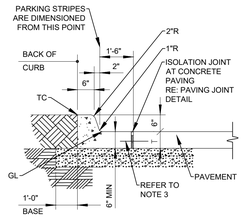
ISOLATION JOINT (IJ) | SAWCUT JOINT (SJ) | CONSTRUCTION JOINT (CJ) | TIED JOINT (TJ) | DOWELED CONTRACTION (SAW CUT) JOINT (DSJ)

"T" PAVEMENT THICKNESS	DOWEL DIAMETER @12" C/C	"L" LENGTH	"E" EMBEDMENT	"D" SAWCUT DEPTH	MAX JOINT SPACING
5"	---	---	---	1 ¼"	12.5'
6"	¾"	14"	6"	1 ½"	15'
7"	⅞"	14"	6"	1 ¾"	15'
8"	1"	14"	6"	2"	15'

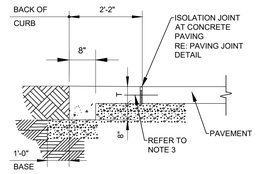


ENLARGEMENT

4 PAVING JOINT DETAIL
SCALE: NTS



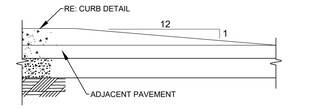
6" BARRIER



FLUSH

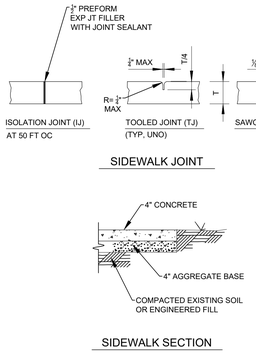
1. PLACE JOINTS IN CURB TO MATCH PAVING - 15 FEET MAX
2. RE: PAVEMENT SECTIONS FOR THICKNESS "T"; 6" MIN
3. EPOXY COATED #4 X 30" DOWELS @ 30" C/C REQUIRED AT UNREINFORCED CURB ADJACENT TO CONCRETE PAVING
4. GUTTER TO SLOPE BACK TO CURB @ 1/4" PER FOOT (TYP).
5. WHEN USED ON THE HIGH SIDE OF ROAD, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT AND THE MINIMUM THICKNESS SHALL BE 6"

5 CURB AND GUTTER
SCALE: NTS



6' TERMINATION

6 CURB TERMINATION
SCALE: NTS

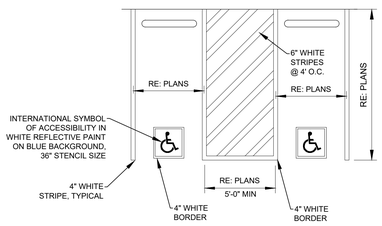


SIDEWALK JOINT

SIDEWALK SECTION

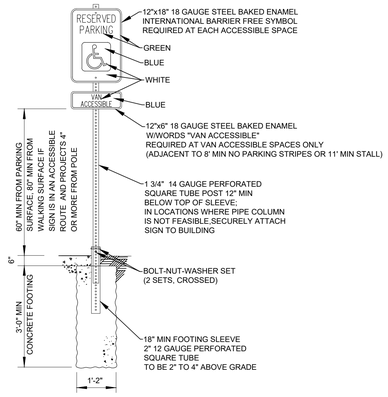
REFER TO TYPICAL PAVEMENT REQUIREMENTS FOR CONCRETE SPECIFICATIONS
SIDEWALK TO HAVE MAX 2% CROSS SLOPE
SIDEWALK FINISH SHALL BE A LIGHT BROOM FINISH, UNO
SIDEWALK THROUGH DRIVEWAYS SHALL BE MIN 6" THICK
SIDEWALK JOINT SPACING EQUAL TO SIDEWALK WIDTH, UNO
AGGREGATE BASE TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY
COMPACT SUBGRADE TO 95% STANDARD PROCTOR DENSITY
ISOLATION JOINTS REQUIRED WHERE SIDEWALK ABUTS CURBS, CATCH BASINS, MANHOLES, INLETS, STRUCTURES, OTHER FIXED OBJECTS, OR EXISTING PAVEMENT

7 SIDEWALK
SCALE: NTS

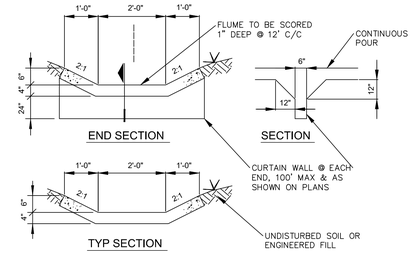


REFER TO SIGN, BUMPER, AND CURB RAMP DETAILS FOR ADDITIONAL INFORMATION AS APPLICABLE BASED ON THE SITE PLAN.
VAN ACCESSIBLE SPACES MUST BE -MIN 11' STALL W/ 5' AISLE OR -MIN 8' STALL W/ 8' AISLE RE: PLANS FOR SPECIFIC DIMENSIONS
VAN SPACES AT ANGLED PARKING MUST HAVE THE ACCESS AISLE ON THE PASSENGER SIDE OF THE VEHICLE AND MEET THE WIDTH REQUIREMENTS FOR A VAN SPACE.

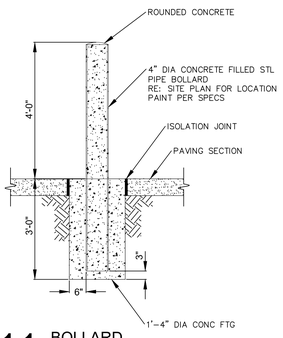
8 ACCESSIBLE STRIPING
SCALE: NTS



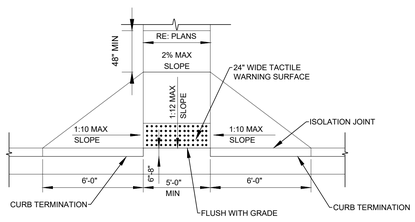
9 ACCESSIBLE SIGNAGE
SCALE: NTS



10 CONCRETE TRICKLE CHANNEL
SCALE: NTS

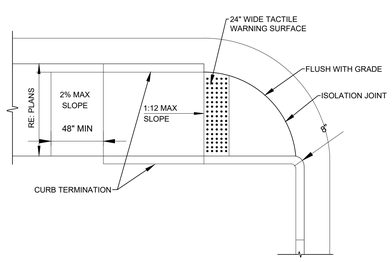


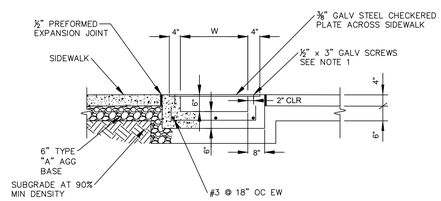
11 BOLLARD
SCALE: NTS



12 CURB RAMPS
SCALE: NTS

LANDING TO BE PROVIDED AT THE TOP OF CURB RAMPS IN COMPLIANCE WITH ADA REGULATIONS. RE: GRADING PLAN
TACTILE DOMES REQUIRED IN THE RIGHT-OF-WAY
TACTILE DOME COLOR: TO BE SUBMITTED FOR APPROVAL
WHERE USED, TACTILE WARNINGS SHALL BE PLACED ACROSS FULL WIDTH OF THE RAMP OR ACCESSIBLE PARKING AISLE
REFER TO CURB, CURB TERMINATION, AND SIDEWALK DETAILS FOR ADDITIONAL INFORMATION
WHERE A CHANGE IN DIRECTION IS NOT AN OPTION TO USERS AT THE TOP OF A CURB RAMP, NO LANDING IS REQUIRED





NOTES:
1. INSTALL COUNTERSUNK SCREWS IN LEADWOOD MASONRY ANCHORS AT 24" OC.
2. 12"-24" OPENING WIDTH AS SPECIFIED ON PLAN.

13 SIDEWALK DRAIN
SCALE: NTS

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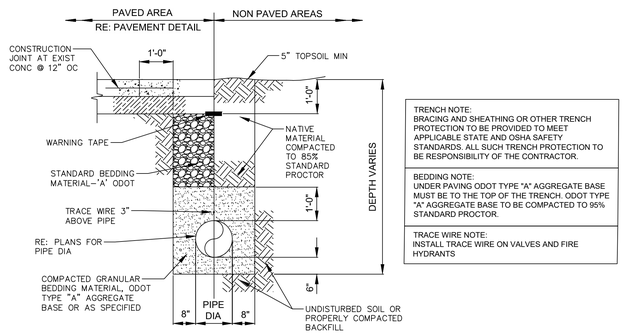
LICENSED PROFESSIONAL ENGINEER
SCOTT M. RODEHAVER
18694
08/29/25

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

DETAILS

C-800

\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 General Notes.dwg
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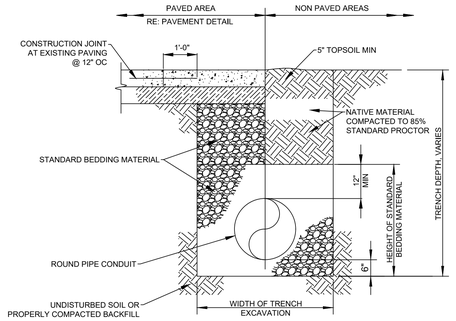


TRENCH NOTE:
BRACING AND SHEATHING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND OSHA SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE RESPONSIBILITY OF THE CONTRACTOR.

BEDDING NOTE:
UNDER PAVING ODOT TYPE "A" AGGREGATE BASE MUST BE TO THE TOP OF THE TRENCH. ODOT TYPE "A" AGGREGATE BASE TO BE COMPACTED TO 95% STANDARD PROCTOR.

TRACE WIRE NOTE:
INSTALL TRACE WIRE ON VALVES AND FIRE HYDRANTS

14 PIPE TRENCH-ALL PIPES EXCEPT STORM SEWER
SCALE: NTS

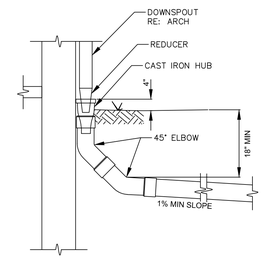


TRENCH NOTE:
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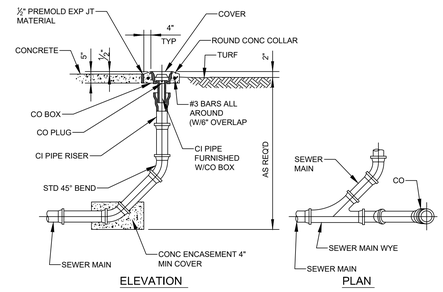
BEDDING NOTE:
STANDARD BEDDING MUST BE ODOT TYPE "A" AGGREGATE BASE.
UNDER PAVING ODOT TYPE "A" AGGREGATE BASE MUST BE TO THE TOP OF THE TRENCH.
ODOT TYPE "A" AGGREGATE BASE TO BE COMPACTED TO 95% STANDARD PROCTOR.

PIPE SIZE, IN.	TRENCH WIDTH, FT.
ID < 24"	OD + 2'
24" > ID < 36"	OD + 2.5'
36" > ID < 60"	OD + 3.5'
ID > 60"	OD + 4'

15 STANDARD PIPE BEDDING DETAIL FOR STORM SEWER
SCALE: NTS

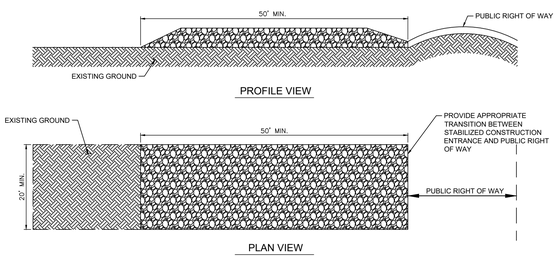


16 DOWNSPOUT TO STORMDRAIN CONNECTION
SCALE: NTS



17 CLEANOUT
SCALE: NTS

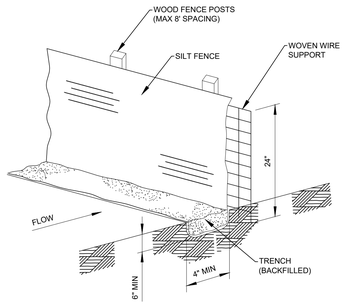
NOTES:
- STONE SIZE AASHTO DESIGNATION M43, SIZE NO. 1 (2-1/2" TO 1-1/2"). USE CRUSHED STONE
- LENGTH - AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.
- WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
- WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SANDBAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
- MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.



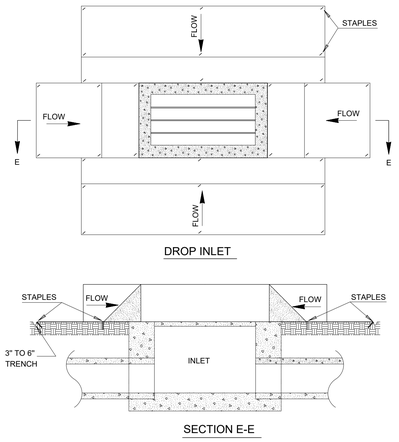
18 STABILIZED CONSTRUCTION ENTRANCE
SCALE: NTS

POSTS SHALL BE INSTALLED AT A SLIGHT ANGLE AGAINST THE FLOW

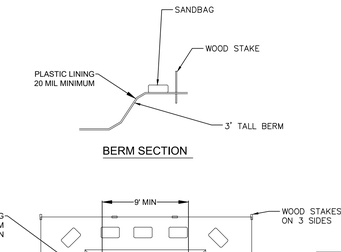
SILT FENCE SHALL BE SECURELY FASTENED TO EACH POST OR TO THE WOVEN WIRE WHICH IS IN TURN ATTACHED TO THE FENCE POSTS

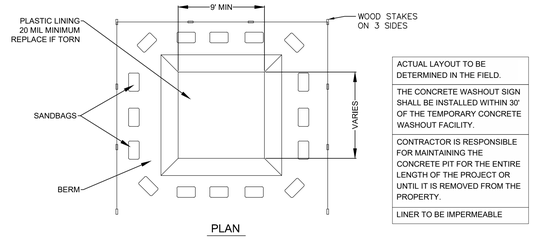


19 SILT FENCE
SCALE: NTS



20 TEMPORARY SILT DIKE (ODOT STD TSD-2)
SCALE: NTS





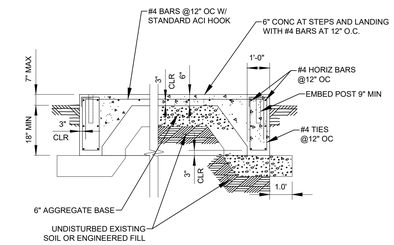
ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.

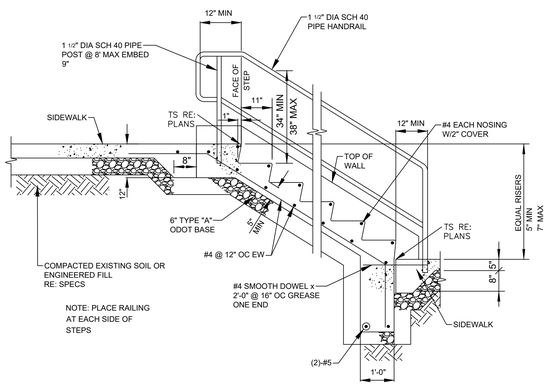
THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONCRETE PIT FOR THE ENTIRE LENGTH OF THE PROJECT OR UNTIL IT IS REMOVED FROM THE PROPERTY.

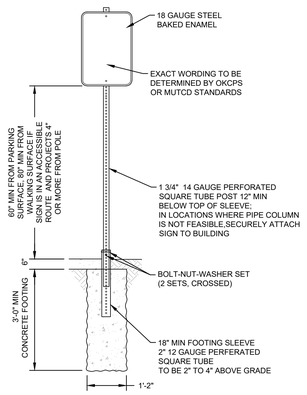
LINER TO BE IMPERMEABLE

21 CONCRETE WASHOUT PIT
SCALE: NTS

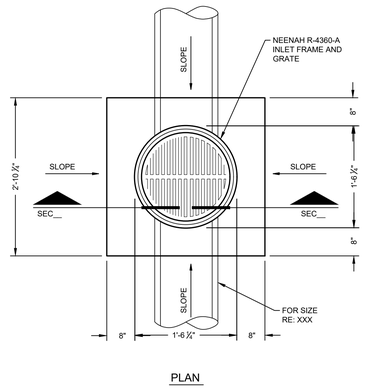


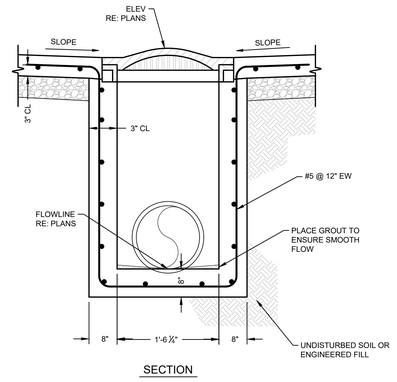


22 CONC STAIRS W/RAIL
SCALE: NTS

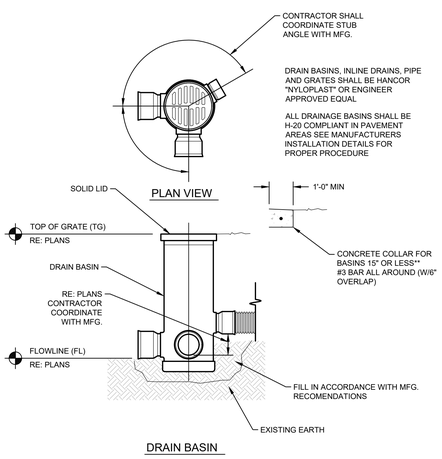


23 SIGN INSTALLATION DETAIL
SCALE: NTS





24 AREA INLET
SCALE: NTS



25 INTEGRATED DRAIN BASIN SYSTEM
SCALE: NTS

STUDIO 45 ARCHITECTS
1648 Southwest Blvd Tulsa, OK 74107
www.s45architects.com

wallace design collective

wallace design collective, pc
structural civil landscape survey
123 north martin luther king jr. blvd.
tulsa, oklahoma 74103
918.584.5858
oklahoma coa1460
exp: 6-30-27

City of Sapulpa

BOOKER T. WASHINGTON
RECREATION CENTER
CITY OF SAPULPA
CONSTRUCTION DOCUMENTS

MARK	DESCRIPTION	DATE

OKLAHOMA PROFESSIONAL ENGINEER
SCOTT M. RODEHAVER
18694
08/29/25

PROJECT NO: 2430428
ISSUE DATE: 09/03/2025

DETAILS

C-801

ORIG SIZE:24"X36"
PLOT:8/28/2025 5:23:03 PM
\\civil-server\Projects\2340428 Booker T Washington Recreation Center\Dwg\PRODUCTION\2340428 General Notes.dwg

Attachment C

OKR10 (may be separately bound or an electronic copy available at the site)

Oklahoma Department of Environmental Quality
Water Quality Division

GENERAL PERMIT
OKR10

FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY DIVISION

ORIGINAL EFFECTIVE DATE: OCTOBER 18, 2022

MODIFICATION EFFECTIVE DATE: APRIL 1, 2023

SECOND MODIFICATION EFFECTIVE DATE: NOVEMBER 1, 2023



Stormwater General Permit for Construction Activities within the State of Oklahoma

Permit No. OKR10

Authorization to Discharge Under the Oklahoma Pollutant Discharge Elimination System (OPDES) Act

In compliance with the Clean Water Act, as amended, (33 U.S.C. § 1251 *et seq.*) and the provisions in 40 Code of Federal Regulations (C.F.R.) § 122.26, adopted and incorporated by reference in Oklahoma Administrative Code (OAC) 252:606-1-3(b)(3)(L), and under the OPDES Act, 27A O.S. § 2-6-201 *et seq.*, as amended, except as provided in Part 2.3 of this permit, Operators of stormwater discharges from construction activities (as defined in Part 1 of this permit), located in an area specified in Part 2.1, are authorized to discharge in accordance with the conditions and requirements set forth herein. Only those Operators of stormwater discharges from construction activities in the general permit area who submit a Notice of Intent (NOI) and receive an authorization to discharge in accordance with Part 3 of this permit are authorized under this permit.

This permit is a modification issued by the Oklahoma Department of Environmental Quality (DEQ) and shall become effective on November 1, 2023. This permit replaces the permit issued on October 18, 2017, and modified April 1, 2023. This permit and the authorizations issued under the permit shall expire at midnight, October 17, 2027.

Signed and issued this 27th day of October, 2023.

For Karen Stuck
Shellie R. Chard, Director
Water Quality Division

Michael B. Moe, P.E, Engineering Manager
Municipal Discharge and Stormwater Permits Section
Water Quality Division

GENERAL PERMIT OKR10 FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA

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PART 1 DEFINITIONS AND ACRONYMS

A. **Applicant** means any person who is contemplating or planning to submit an NOI for approval or has submitted an NOI for approval and is waiting for authorization to discharge stormwater under the provisions of this permit.

B. **Aquatic Resource of Concern ("ARC")** means a waterbody corridor which contains habitat (including critical habitat) for federally listed (by the U.S. Fish and Wildlife Service) or state listed (by the Oklahoma Department of Wildlife Conservation) endangered or threatened aquatic species.

C. **Best Management Practice ("BMP")** means a schedule of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the state. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

D. **Clean Water Act ("CWA")** [33 U.S.C. § 1251 *et seq.*] (formerly referred to as the Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended, Pub. L. 95-21l, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117.

E. **Commencement of Construction** means the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

F. **Control Measure** as used in this permit refers to any BMP or other method used to prevent or reduce the discharge of pollutants to waters of the state.

G. **Construction Activities** means earth-disturbing activities, such as the clearing, grading, excavation of land, or other construction-related activities (e.g., stockpiling of fill material; placement of raw materials at the site) that could lead to the generation of pollutants. This does not include the linear opening of soil in a single line of two feet or less in width, on sites that have not been previously disturbed, utilizing equipment that immediately closes the opening as part of the equipment's normal operation by the closure of the sidewalls to their original configuration after passage. Some of the types of pollutants that are typically found at construction sites are sediment, nutrients, heavy metals, pesticides and herbicides, oil and grease, bacteria and viruses, trash, debris, and solids, treatment polymers or any other toxic chemicals.

H. **Construction Site or Site or Development or Project or Construction** means the land or water area where construction activities will occur and where stormwater controls will be installed and maintained. The construction site or development or project includes construction support activities, which may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether.

I. **Construction Support Activity** means a construction-related activity that specifically supports the construction activity and involves earth disturbance or pollutant-generating activities of its own, and can include activities associated with concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas.

J. **Corrective Actions** are actions that permittees take in compliance with this permit to:
   a. Repair, modify, or replace any stormwater control used at the site;
   b. Clean up and dispose of spills, releases, or other deposits; or
   c. Remedy a permit violation.

K. **Dewatering Activities** means the act of draining rainwater and/or ground water from building foundations, vaults, trenches and other construction structures.

L. **Discharge** when used without qualification means the "discharge of a pollutant."

M. **Discharge of Stormwater Associated with Construction Activity** as used in this permit, refers to a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

N. **Ephemeral Stream** means an entire stream which flows only during or immediately after a rainfall event, and contains no refuge pools capable of sustaining a viable community of aquatic organisms.

O. **Facility or Activity** means any OPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the OPDES program.

P. **Hazardous Substances or Hazardous or Toxic Waste** means any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 C.F.R. § 261.3.

Q. **Immediately** means as soon as practicable but no later than the end of the next work day.

R. **Impaired Water (or Water Quality Impaired Water)** is the water identified by the state, or EPA as not meeting applicable state water quality standards and (1) requires development of a TMDLs (pursuant to Section 303(d) of the CWA; or (2) is addressed by an EPA/state approved or established TMDL; (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 C.F.R. § 130.7(b)(1).

S. **Large Common Plan of Development or Sale** means an area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. This plan consists of many small construction projects that collectively add up to one or more acres of total disturbed land. For example, an original common plan of development of a residential subdivision might lay out the streets, house lots, and areas for parks, schools and commercial development that the developer plans to build or sell to others for development. All these areas would remain part of the common plan of development or sale until the intended construction is completed.

T. **Leachable Hazardous Substance** refers that those hazardous substances are naturally extracted from material during rain or routine external building wash events.

U. **Municipal Separate Storm Sewer System ("MS4")** is defined at 40 C.F.R. § 122.26(b)(8) to mean a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

   a. Owned and operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
   b. Designed or used for collecting or conveying stormwater;
   c. Which is not a combined sewer; and
   d. Which is not part of a Public Owned Treatment Works ("POTW") as defined at 40 C.F.R. § 122.2.
   e. Note: A Phase II MS4 can also be owned or operated by federal and state government, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. [see 40 C.F.R. § 122.26(b)(16)]

V. **Non-Process Water** means utility wastewaters (e.g., water treatment residuals, boiler blowdown, and air pollution control wastewaters from heat recovery equipment); treated or untreated wastewaters from groundwater remediation systems; dewatering water for building foundations; and other wastewater streams not associated with a production process.

W. **Notice of Intent ("NOI")** means Notice of Intent (DEQ Form 606-002A).

X. **Notice of Termination ("NOT")** means Notice of Termination (DEQ Form 606-003).

Y. **Operator** for the purpose of this permit and in the context of stormwater associated with construction activity, means any party associated with a construction project that meets either of the following two criteria:

   a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (in most cases this is the owner of the site); or
   b. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a Stormwater Pollution Prevention Plan ("SWP3") for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities specified by the SWP3 or comply with other permit conditions; in most cases this is the general contractor of the project).

   In addition, ''owner'' refers to the party that owns the structure being built. Ownership of the land where construction is occurring does not necessarily imply the property owner is an operator (e.g., a landowner whose property is being disturbed by construction of a gas pipeline or a landowner who allows a mining company to remove dirt, shale, clay, sand, gravel, etc. from a portion of his property). This definition is provided to inform permittees of DEQ's interpretation of how the regulatory definitions of "operator" and "facility or activity" are applied to discharges of stormwater associated with construction activity.

Z. **OPDES** means the Oklahoma Pollutant Discharge Elimination System.

AA. **Outstanding Resource Waters ("ORW")** means those waters of the state which are designated as such in Oklahoma's Water Quality Standards OAC 252:730-5-25, Appendix A.

BB. **Permit** means the General Permit OKR10 for Stormwater Discharges from Construction Activities within the State of Oklahoma.

CC. **Permittee** means a person who has submitted an NOI and has received authorization to discharge stormwater from construction or land disturbing activities under this permit.

DD. **Point Source** means any discernible, confined, and discrete conveyance, including but are not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, landfill leachate collection system, or vessel or other floating craft, from which pollutants or wastes are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

EE. **Pollutant** means any material, substance, or property which may cause pollution (e.g., dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste).

FF. **Qualified Person or Qualified Personnel** means those persons (either the operator's employees or outside personnel) who are knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possess the skills and training to assess conditions at the construction site that could impact stormwater quality, and who possess the skills and training to assess the effectiveness of any control measures selected to control the quality of stormwater discharges from the construction activity. For inspections that are required in accordance with Addendum C, a qualified person or qualified personnel means those persons (either the operator's employees or outside personnel) who are knowledgeable in the principles and practices of construction stormwater controls and pollution prevention, and who possess the education and ability to assess conditions that could impact stormwater quality and assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit..

GG. **Runoff Coefficient** means the fraction of total rainfall that will appear at the conveyance as runoff.

HH. **Stabilization** is the process of covering exposed ground surfaces with vegetative or non-vegetative practices that reduce erosion and prevent sediment discharge from occurring.

II. **Stormwater** means rainwater runoff, snowmelt runoff, and surface runoff and drainage.

JJ. **Stormwater Associated with Industrial Activity** is defined at 40 C.F.R. §§ 122.26 (b) (14) & (15) and incorporated here by reference. Most relevant to this permit is 40 C.F.R. § 122.26 (b) (14) (x) and 40 C.F.R. § 122.26 (b) (15) (i), that relates to construction activity including clearing, grading, and excavation activities that result in the disturbance of one or more acres of total land area, or less than one acre if part of a larger common plan of development or sale.

KK. **Stormwater Discharge-Related Activity** is defined as disturbance activities that cause, contribute to, or result in point source stormwater pollutant discharges, including but are not limited to excavation, site development, grading, and other land disturbing activities; and control measures to control stormwater discharges including the siting, construction, and operation of BMPs to control, reduce, or prevent stormwater pollution.

LL. **Stormwater Pollution Prevention Plan ("SWP3")** See Part 5.

MM. **Takes or Taking** means any action that would "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any threatened or endangered species. Harm may include significant habitat modification that actually injures a species.

NN. **Total Maximum Daily Load ("TMDL")** means the sum of the individual waste load allocations ("WLAs") for point sources, safety, reserves, and loads from nonpoint sources and natural background.

OO. **Waters of the State** means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, storm sewers and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, and shall include under all circumstances the waters of the United States which are contained within the boundaries of, flow through, or border upon this state or any portion thereof. Provided, waste treatment systems, including treatment ponds or lagoons designed to meet federal and state requirement other than cooling ponds as defined in the Clean Water Act or rules promulgated thereto and prior converted cropland are not waters of the state. (as defined in Oklahoma Statutes 27A O.S. § 1-1-201).

PART 2 COVERAGE UNDER THIS PERMIT

2.1 Eligibility

A. Area of Coverage where DEQ is the Permitting Authority
This permit authorizes discharges of stormwater and certain non-stormwater discharges from construction activities. All operators of construction activities meeting any of the requirements below are required to comply with this permit:
1. Construction sites that are greater than, or equal to, one acre[1].
2. Construction sites that are less than one acre if it is part of a larger common plan of development or sale which will ultimately disturb land equal to or greater than one acre[1].

B. Area of Coverage where Another Agency is the Permitting Authority
Under the Environmental Protection Agency's ("EPA's") approval of the Oklahoma Pollutant Discharge Elimination System ("OPDES") program, DEQ has had stormwater permitting and enforcement responsibility for large and small construction activities since November 19, 1996, except for construction activities below:
1. Any construction activity on Indian country lands in Oklahoma.
2. Construction activity associated with oil and gas extraction[2] under the Standard Industrial Classification ("SIC") Group 13[3], crude petroleum and refined petroleum products pipelines under SIC Group 46[4], and natural gas transmission under SIC Group 492[5].
3. Construction activities associated with agricultural production and services[6] under SIC Groups 01, 02 and 07; forestry under SIC Group 08; and fishing, hunting and trapping under SIC Group 09[7].

2.2 Types of Authorized Discharges

A. Authorized Stormwater Discharges
1. This permit authorizes discharges associated with construction activities from sites meeting the requirements in Part 2.1.A.
2. This permit authorizes discharges associated with construction support activities (e.g., concrete or asphalt batch plants[8], equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas) provided:
   a. The construction support activity is directly related to a construction site that is required to have this permit coverage for discharges of stormwater associated with construction activity.
   b. The construction support activity is not a commercial operation, does not serve multiple unrelated construction projects by different operators, and does not operate beyond the completion of the construction activity at the last construction project it supports.

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[1] As defined in 40 C.F.R. § 122.26 (b)(14)(x) for construction sites of five or more acres, and 40 C.F.R. § 122.26 (b)(15)(i) for construction sites of more than one acre but less than five acres, including the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb land equal to or greater than one acre, and those construction site discharges designated by DEQ as needing a stormwater permit under 40 C.F.R. § 122.26 (a)(1)(v), or under § 122.26 (a)(9) and § 122.26 (g)(1)(i).

[2] An authorization to discharge stormwater from a construction activity associated with oil and gas extraction under the SIC Group 13, or pipelines under SIC Group 46, or natural gas transmission under SIC Group 492, may be obtained through the EPA National Pollutant Discharge Elimination System ("NPDES") eReporting Tool for its Construction General Permit ("CGP").

[3] DEQ shall have jurisdiction over natural gas liquid extraction plants under SIC 1321 and service company base operating stations under SIC 1389.

[4] Except pipelines within certain facilities regulated by DEQ.

[5] DEQ shall have jurisdiction over natural gas liquid extraction plants under SIC 1321.

[6] An authorization to discharge stormwater from construction activities associated with agricultural and forestry, fishing production and services under SIC groups 01, 02, 07, 08 and 09, may be obtained by contacting the Oklahoma Department of Agriculture, Food & Forestry's Agriculture Pollutant Discharge Program at (405)522-5493.

[7] DEQ shall have jurisdiction over SIC group 092 (fish hatcheries and preserves).

[8] These discharges are subject to numeric effluent limitation guidelines in Part 4.5 "Numeric Technology-Based Effluent Limitations" and Appendix C.

c. Appropriate controls and measures must be identified in the Notice of Intent ("NOI") and the facility's Stormwater Pollution Prevention Plan ("SWP3") covering the discharges from the construction support activity areas.
d. The construction support activity is not located within the watershed of an Outstanding Resource Water ("ORW").

B. Authorized non-stormwater discharges are
1. potable water, including uncontaminated waterline and fire hydrant flushing;
2. landscape irrigation water provided all pesticides, herbicides, and fertilizers have been applied in accordance with the approved manufacturers' instructions and/or labeling;
3. water used to control dust;
4. uncontaminated air conditioning or compressor condensate;
5. uncontaminated groundwater or spring water;
6. waters used to wash vehicles and equipment where soaps, solvents or detergents are not used;
7. routine external building wash-down that does not use soaps, solvents and/or detergents and/or building wash-down from external surfaces that does not contain leachable hazardous substances (e.g., paint or caulk containing polychlorinated biphenyls ("PCBs"));
8. pavement washing waters provided spills or leaks of toxic or hazardous substances have not occurred (unless all spilled material has been removed) and where soaps, solvents and detergents are not used;
9. foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water;
10. discharges or flows from emergency firefighting activities that either: a) do not involve per- and polyfluoroalkyl substances (PFAS)-containing aquatic firefighting foams (AFFFs), or b) involve PFAS-containing AFFFs and are consistent with Part 4.4.F of this permit. Measures shall be taken by the permittee or site/facility, as soon as practicable, to reduce any such pollutant releases to avoid or minimize the impacts on water quality and to ensure public health and safety. After the emergency has ceased, non-stormwater discharges (e.g., discharges associated with clean-up) are prohibited. Determination of cessation of the emergency is at the discretion of the emergency on-site coordinator; and
11. uncontaminated flows from dewatering activities, including dewatering of trenches and excavations, will be allowed if operational and structural controls are used to reduce any pollutant releases to avoid or minimize the impacts on water quality (see Part 4.2.M). These controls must be included in your SWP3.

C. Non-stormwater discharges are authorized only under the following conditions:
1. Document in your SWP3 which authorized non-stormwater discharges will be present on your site and where they will be discharged.
2. If necessary, ensure these discharges are directed to vegetated areas, existing controls, or implement additional controls to minimize the discharge of pollutants.

2.3 Limitations on Coverage

A. This permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any temporary construction support activity site, has undergone final stabilization and has an approved Notice of Termination ("NOT"). Industrial post-construction stormwater discharges may need to be covered by a separate OPDES permit.

B. This permit does not authorize discharges that are mixed with sources of non-stormwater, other than those discharges that are identified in Part 2.2.B and are in compliance with this permit or with a separate OPDES or NPDES permit.

C. This permit does not authorize stormwater discharges associated with construction and/or construction support activity that have been covered under an individual permit or which require coverage under an alternative general permit in accordance with Part 7.10, except stormwater discharges from concrete and asphalt batch plants specified in Part 2.2.A.2.

D. This permit does not authorize stormwater discharges from construction sites that DEQ determines will cause, have reasonable potential to cause, or contribute to violations of water quality standards, including anti-degradation policy. Where such determinations have been made, DEQ may notify the operator(s) that an individual permit application is necessary in accordance with Part 7.10. However, DEQ may

authorize coverage under this permit after appropriate controls and implementation procedures designed to bring the discharges into compliance with water quality standards have been included in the SWP3.

E. This permit does not authorize stormwater discharges, allowable non-stormwater discharges, and stormwater discharge-related activities that
   1. are not protective of federal and state listed endangered and threatened species or designated critical habitat.
   2. are likely to jeopardize the continued existence of any species that are listed or proposed to be listed as endangered or threatened or result in the adverse modification or destruction of habitat that is designated or proposed to be designated as critical.
   3. may cause a prohibited "take" of endangered or threatened species, including significant habitat modification that actually injures a species.

F. This permit does not authorize new sources or new discharges of constituents of concern to impaired waters unless otherwise allowable under OAC 252:606 and applicable state law. Impaired waters are those that do not meet applicable water quality standards and are listed on the latest approved Clean Water Act ("CWA") Section 303(d) list. Pollutants of concern are those constituents for which the waterbody is listed as impaired. The 303(d) list of impaired waters can be found in Appendix C of Oklahoma's Integrated Report on the DEQ web site at https://www.deq.ok.gov/water-quality-division/watershed-planning/integrated-report/, or the DEQ GIS Map and Data Viewer at https://gis.deq.ok.gov/maps/.

G. This permit does not authorize discharges of pollutants of concern to impaired waterbodies for which there is an approved total maximum daily load ("TMDL") or a watershed plan incorporated in Oklahoma's Water Quality Management Plan in lieu of a TMDL unless they are consistent with the approved TMDL or watershed plan or local compliance plan. Applicants must comply with the requirements in Part 5.1.F.

H. This permit does not authorize the discharge of toxic or hazardous substances or oil resulting from a spill or other release.

I. This permit does not authorize the discharge of wastewater from the washout or cleanout of concrete, unless managed by an appropriate control as described in Part 4.4.H.

J. This permit does not authorize the discharge of wastewater from the washout or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.

K. This permit does not authorize the discharge of fuels, oils, or other pollutants used in vehicle operation and maintenance.

L. This permit does not authorize the discharge of soaps, detergents or solvents used in vehicle and equipment washing.

2.4 Historic Preservation

The EPA has determined that DEQ's NPDES permitting activities are not federal undertakings and, therefore, are not subject to review under Section 106 of the National Historic Preservation Act. However, applicants and permittees must comply with the State Antiquities Act (Title 53, Chapter 20, Section 361) where applicable and the Burial Desecration Law (Title 21, Chapter 47, Section 1168.0-1168.6), as well as with any applicable local laws concerning the identification and protection of historic properties.

Applicants and permittees who may receive federal funding or other federal assistance in the completion of their projects must be aware that compliance with Section 106 of the Act may apply. For information about

the Section 106 review process in Oklahoma, Oklahoma properties listed on or eligible for the National Register of Historic Places, and related topics, contact:

State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105
(405)521-6249
https://www.okhistory.org/shpo/index

Oklahoma Archeological Survey
111 East Chesapeake
Norman, OK 73019
405/325-7211
https://www.ou.edu/archsurvey

2.5 Meeting Eligibility Requirements for Endangered Species

A. Eligibility Criteria
   1. Activities authorized by this permit must avoid unacceptable effects to federal and state listed endangered or threatened (listed) species or designated critical habitats. Direct and indirect effects must be considered. Coverage under this permit is available only if your stormwater discharges, allowable non-stormwater discharges, and discharge-related activities are not likely to
      a. jeopardize the continued existence of any listed species or result in the adverse modification or destruction of critical habitat, or
      b. cause a prohibited "take" of endangered or threatened species, including significant habitat modification that actually injures a species, unless such "take" is authorized under Sections 7 or 10 of the Endangered Species Act ("ESA").
   2. Discharge-related activities authorized by this permit include
      a. activities that cause, contribute to, or result in point source stormwater pollutant discharges, including but not limited to excavation, site development, grading, and other land disturbing activities, and
      b. measures to control stormwater including the siting, construction, and operation of BMPs to control, reduce, or prevent stormwater pollution.

B. Eligibility Certification
   1. You must certify that you have met eligibility criteria for protection of threatened or endangered species and their critical habitat. Your signed NOI will constitute your certification of eligibility. If the eligibility requirements cannot be met, you may seek coverage under a DEQ individual permit. This eligibility must be evaluated before the NOI is submitted. DEQ strongly recommends that you conduct this evaluation at the earliest possible stage to ensure that measures to protect listed species are incorporated early in the planning process.
   2. You must state on the NOI which of the criteria listed in Part 2.5.B.3 you are relying upon for meeting the endangered species eligibility.
   3. You must meet one or more of the criteria below for the entire term of coverage under this permit. Failure to continue to meet one of these criteria during the term of the permit will render an applicant ineligible for coverage under this permit. If you are located partially or wholly in an area described in Appendix A then you must meet criterion B, C, D, or E for the term of this permit. If you are not located in the shaded area or watersheds listed in Exhibit I, then you meet the terms of criterion A. The information used to make the eligibility determination must be documented and included as part of the SWP3.
      a. Criterion A requires that proposed construction site or land disturbing activity is not located within any of the corridors of the federal or state identified aquatic resource of concern ("ARC"), and further investigation is not required.
      b. Criterion B requires that the proposed construction site or land disturbing activity is located within a corridor of a federal or state identified ARC. Operators must provide and implement

measures to protect the endangered or threatened species or their critical habitat; these measures must be identified in the NOI and described in the facility's SWP3.

c. Criterion C requires that the applicant use Appendix D to evaluate alternatives of buffer requirements and select equivalent sediment controls or contact DEQ for further consultation if one of those eligibility criteria under Part 2.5.B.3.b, d, or e cannot be met.
d. Criterion D requires that the applicant's federally approved construction activities are authorized by the appropriate federal or state agency and that authorization addresses the Endangered Species Act Section 7 consultation for the stormwater discharge or stormwater discharge-related activities. Applicants selecting option d must include documentation from U.S. Fish and Wildlife Service ("USFWS") or a qualified biologist that demonstrates Section 7 consultation has been completed. The SWP3 must comply with and be updated to include any conditions resulting from that consultation.
e. Criterion E requires that the applicant's stormwater discharges and stormwater discharge-related activities are already addressed in another operator's certification of eligibility that includes the applicant's project area. By certifying eligibility under this part, the applicant agrees to comply with applicable measures or controls upon which the other operator's certification was based.

PART 3 AUTHORIZATION UNDER THIS PERMIT

3.1 Responsibilities of Operators

Permittees may meet one or both of the operational control components in the definition of "operator" found in Part 1.Y. The criteria within the definition of "operator" may allow for more than one entity to be considered an "operator" at a construction site. Where it is determined to be more efficient or desirable, this permit allows for all construction activities at a site to be covered under a single authorization and a single SWP3 held by a "primary operator."

A. Types of Operators
   1. A primary operator is
      a. the sole operator at a construction site,
      b. an operator who has obtained permit coverage for discharges over which it has operational control of construction plans and specifications and/or day-to-day construction activities, or
      c. the operator who has chosen to obtain permit coverage for all discharges from all earth-disturbing activities at a construction site, even if such discharges originate from portions of the site operated by another entity (e.g., secondary operators).
   2. A secondary operator, for a construction project that has multiple operators, is an operator who has elected to have the discharges from earth-disturbing activities on a construction site to which he/she has operational control covered by the authorization and SWP3 held by the primary operator rather than obtaining separate permit coverage for those discharges. If the primary operator chooses not to cover the secondary operator's construction activities or the secondary operator elects not to have their discharges from earth-disturbing activities covered by the primary operator's authorization, this secondary operator must develop a separate SWP3, submit a separate NOI and obtain separate permit coverage, and comply with all primary operator permit requirements for the portion(s) of the site over which it has operational control.
   3. A utility installation operator is an operator who only has operational control over utility installation (e.g., telephone, electric, gas, cable TV, etc.) and who has elected to have the discharges from earth-disturbing activities on a construction site to which he/she has operational control covered by the authorization and SWP3 held by the primary operator rather than obtaining separate permit coverage for those discharges. If the primary operator chooses not to cover the utility installation operator's construction activities or the utility installation operator elects not to have their discharges from earth-disturbing activities covered by the primary operator's authorization, this utility installation operator must develop a separate SWP3, submit a separate NOI and obtain separate permit coverage, and comply with all primary operator permit requirements for the portion(s) of the site over which it has operational control.

B. Responsibilities of a Primary Operator

   The primary operator is ultimately responsible for the runoff from the perimeter of the area(s) over which their authorization covers. Regardless of the reason for the runoff, the primary operator is responsible for ensuring sufficient overall controls for this area.
   1. General Responsibilities

      The primary operator must
      a. develop an SWP3 (prior to submitting an NOI), obtain permit authorization, implement and maintain control measures, and maintain and update the SWP3 for all area(s) of activity covered by the authorization,
      b. be thoroughly familiar with and adhere to provisions of the permit, the NOI, the SWP3 and all BMPs and control measures which apply to all areas of activity covered by the authorization, and
      c. must avoid damaging or interfering with the effectiveness of any BMPs and/or control measures on the site.
   2. Responsibilities Based on Operational Control
      a. Operational Control over Constructions Plans and Specifications

         Primary operators with control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g., developer, owner, or operator), must ensure that:

i. The project plans and specifications meet the minimum requirements of this permit.
ii. The SWP3 indicates the areas of the project where this operator has control over project plans and specifications (including the ability to make modifications in plans and specifications), and ensure all other operators implementing portions of the SWP3 who may be impacted by any changes to the SWP3 are notified of such modifications in a timely manner and receive a copy of the updated SWP3.
iii. The SWP3 indicates the name(s) and authorization number(s) of the parties (primary, secondary, and/or utility installation operators) with operational control over day-to-day activities necessary to ensure compliance with the SWP3 and permit conditions for portions of the project where these parties have control. If these parties have not been identified and do not have a DEQ authorization at the time the SWP3 is initially developed, the permittee with operational control over project plans and specifications shall be the responsible party until such time as the operational control is transferred to another party, the SWP3 is updated, and this new party obtains permit coverage.

b. Operational Control Over Day-to-Day Activities
Primary operators with control over day-to-day activities must ensure that:
i. The SWP3, for all portions of the project where they have control, meets the minimum requirements of this permit and identifies the parties (primary, secondary, and utility installation operators) responsible for implementation of control measures.
ii. The SWP3 indicates all areas of the project where they have control over day-to-day activities.
iii. The SWP3 for all areas where they have control indicates the name(s) and authorization number(s) of the parties with operational control over project plans and specifications (including the ability to make modifications in plans and specifications), if different than the primary operator with control over day-to-day activities.

3. Responsibilities Regarding Secondary Operators
The primary operator must
a. identify all secondary operators in the SWP3 and identify the specific areas of the site where they will be active,
b. require that secondary operators provide notification to the primary operator and execute any written notification required by the primary operator prior to beginning any earth-disturbing activity, and
c. ensure that secondary operators are familiar with and adhere to provisions of the permit, the NOI, the SWP3, and all BMPs and other control measures that apply to their operations through contractor certifications or similar documentation.
d. require that secondary operators avoid damaging or interfering with the effectiveness of any control measure on the construction site or notify the primary operator if such occurs.

4. Responsibilities Regarding Utility Installation Operators
The primary operator must ensure that entities with control over utility installation, including utility companies and their subcontractors,
a. are covered under the primary operator's NOI, authorization, and SWP3, or have their own separate authorization and SWP3,
b. implement BMPs, including those that are protective of endangered species, and
c. implement final stabilization requirements.

5. Responsibilities Regarding Terminations
The primary operator shall not terminate permit coverage until at least one of the following conditions has been met:
a. All construction, including landscaping and lot development, has been completed, and final stabilization has been achieved.
b. All lots are sold and developed, and there are no temporary common controls for subdivision outfalls.
c. All construction activity by the primary operator is completed, final stabilization has been achieved on all areas under the control of the primary operator, the remaining undeveloped lots

have been sold to a new operator(s), and a Notification of Change of Ownership (NCO) form(s) for the new operator(s) has been prepared and signed.

d. A new operator has obtained permit coverage which will include all areas currently covered by the primary operator's authorization.

3.2 Obtaining Authorization

A. Develop a new SWP3[9] or update an existing SWP3 as necessary prior to submitting an NOI to DEQ. A copy of the SWP3 does not have to be submitted to DEQ unless specifically requested by DEQ. However, DEQ may require submittal of a copy of the SWP3 for review at any time. An updated version of the SWP3 must be submitted within 14 days of such a request.

B. Submit an official NOI (**DEQ Form 606-002A**) in accordance with the applicable deadline specified in Part 3.5. The NOI must be complete and accurate with all required information and supporting documentation. Only one NOI needs to be submitted to cover all of the operator's activities on a common plan of development or sale (e.g., a separate NOI does not need to be submitted for each separate lot in a residential subdivision or for two separate buildings being constructed at a manufacturing facility, provided the NOI and SWP3 covers each area where the primary operator has operational control). The SWP3 must be implemented upon commencement of construction activities.

C. Submit the applicable application fee and annual permit fee established in OAC 252:606 OPDES Standards. An invoice of the permit fee due will be sent if the fee is not included with the NOI or upon request.

D. Upon receipt of the properly completed NOI and application/permit fees, DEQ will process the information and provide an authorization certificate accompanied by a letter of notification. The applicant/primary operator (as well as any secondary or utility installation operators, if applicable) is not authorized to commence earth-disturbing activities or discharge stormwater from construction activities under the terms and conditions of this permit until an authorization covering their construction activities is received from DEQ. DEQ may deny coverage under this permit based on a review of the NOI or other information and require submittal of an application for an individual OPDES permit (see Part 7.10 of this permit).

E. After issuance of an authorization, an amended NOI shall be submitted by a permittee if circumstances change. When there is a change to the site's primary operator, the new primary operator must submit a new NOI, and the previous primary operator must submit an NOT form as specified in Part 3.6.
The following modifications to an NOI form will result in a 14-day review process:
   1. Changes to the name of the primary operator, or addition of an operator (including a secondary or utility installation operator);
   2. Election by the primary operator to no longer cover secondary or utility installation operators under it authorization and SWP3;
   3. Changes to the project or site name;
   4. Increases to the estimated area to be disturbed;
   5. Changes to the name of the receiving water, or additions to the applicable receiving waters;
   6. Changes to eligibility information related to endangered species protection or historic preservation;
   7. Changes to information provided related to the use of chemical treatment at your site

   The amended NOI must be submitted at least two days prior to the change or addition and shall include the facility's assigned permit number and a description of the requested change(s). For stormwater discharges from construction projects where the primary operator changes, including instances where an operator (including a secondary or utility installation operator) is added after an authorization has been issued, the new primary operator must submit an NOI at least two days before assuming operational control over site specifications or commencing work on-site. DEQ will provide an acknowledgement by mail or email that the amended NOI has been received and processed. During the 14-day review process, the operator(s) (including secondary and utility installation operators) may continue to operate based on the information provided in the original NOI, but must wait until the review period has ended before

[9] The SWP3 shall cover either the entire site or all portions of the site where the applicant has operational control. A "joint" SWP3 may be developed and implemented as a cooperative effort where there is more than one operator at a site.

commencing or continuing activities on any portion of the site that would be affected by the changes, unless DEQ notifies them that the authorization is delayed or denied.

F. Permittees must update their SWP3s within seven calendar days to reflect the change(s). An amended NOI cannot be used to:
   1. Decrease the total project area (e.g., area to be disturbed has decreased from 40 acres to 20 acres).
   2. Transfer authorization to another operator.

G. In the event that a primary operator elects to no longer cover a secondary or utility installation operator's construction activities or a secondary or utility installation operator elects to no longer have their discharges from earth-disturbing activities covered by the primary operator's authorization, the secondary or utility installation operator is no longer authorized to discharge under this permit, and must discontinue its construction activities and discharges until it has developed its own separate SWP3 and obtained separate authorization in accordance with the requirements of Parts 3.2.A-D and the deadline for NOI submittal of Part 3.5.A. In the former case, the primary operator must submit an amended NOI to DEQ as specified in Part 3.2.E, as well as providing written notification to all secondary and utility operators at least two days prior to making the change. In the latter case, the secondary or utility installation operator must provide written notification to DEQ and the primary operator at least two days prior to making the change, and must develop a separate SWP3, submit a separate NOI, and obtain separate permit coverage, and comply with all primary operator permit requirements for the portion(s) of the site over which it has operational control.

3.3 Contents of the NOI

The NOI form shall include the following information:

A. Indicate whether this is a new application, or amendment/modification or renewal of an existing NOI, including your authorization number if this is an amendment/modification or renewal;
B. Provide the legal name, mailing address, phone number, and email address of the company/firm, public organization, or any other entity operator filing the NOI for permit coverage;
C. Indicate whether the operator has operational control over plans and specifications and/or day-to-day construction activities;
D. Provide name, title, phone number, and email address for the operator's point of contact;
E. Provide the site/project's official name, phone number and street address or general location information (e.g., intersection of State Highway 61 and 34), and SIC Code(s);
F. Provide the name, title, phone number, and email address for the site/project's point of contact;
G. Provide the name, title, phone number, and email address for the site/project's consultant, if any;
H. Provide description of the activity/purpose of the project (i.e., residential subdivision, commercial building, road and/or bridges, wind farm, etc.);
I. Provide latitude and longitude of the construction project/site at the center of the site (or latitude and longitude at the starting and ending points if it is a linear construction site). Latitude and longitude can be obtained from DEQ's and USGS's websites or other mapping tools;
J. Provide estimated construction project starting date and ending date. The dates must be provided in MM-DD-YYYY where MM is the month, DD is the date and YYYY is the year;
K. Provide total area of construction site and estimated area to be disturbed in acres;
L. Provide total impervious area (pre-construction) and total impervious area construction completed (post-construction) in acres;
M. Provide post-construction runoff coefficient of the site. The operator may use recommended runoff coefficients in Appendix E of this permit. Average coefficients for composite areas may be calculated on an area-weighted basis from $C=\sum C_i A_i / \sum A_i$, where C_i is the coefficient applicable to the area A_i;
N. Describe the nature of fill material and existing data describing soils (i.e., coarse-grained soils: gravels, sands, or fine-grained soils: silts and clays, silts and clays, and highly organic soils etc.) Operator may use soil classification chart in Attachment A of Appendix D to determine the types of the soils on the site;
O. Indicate whether this site/project is part of common plan of development or sale;
P. Indicate whether there are other operators associated with this site/project and, if so, whether: a) all operators will be covered under this authorization; b) all, or some, operators will be obtaining separate authorizations and will be documented in the SWP3; and/or, c) new owner/operators will be obtaining

a separate authorization and will be documented using Form 605-NCO Notification of Change of Ownership (NCO) which will be kept with the SWP3.

Q. Indicate whether the site/project discharges stormwater to a Municipal Separate Storm Sewer System (MS4);
R. Identify all the receiving waterbodies from the sites that receive stormwater discharges, including names of the waterbodies;
S. Indicate whether the receiving waterbodies are included on DEQ's latest approved 303(d) list of impaired waterbodies, including the pollutant(s) for which the waterbody is impaired;
T. Indicate whether the stormwater discharges drain to a waterbody or watershed with an approved or established TMDL, watershed plan in lieu of a TMDL, or local compliance plan. Additional site-specific requirements may be applicable if the site is located in such waterbody or watershed;
U. Indicate endangered species eligibility by identifying whether or not the construction site or land-disturbing activity is within the specified corridor of a federal or state ARC; whether Appendix D will be used to develop equivalent sediment controls; whether you are required to have an Endangered Species Act Section 7 consultation process; and/or whether you are relying on another permittee's certification of eligibility and are agreeing to comply with the conditions of that certification.
V. Confirm that the SWP3 has been prepared and is available on-site for review;
W. Indicate whether this operator is registered with the Secretary of State of Oklahoma;
X. Indicate whether this site or project will have construction support activities;
Y. Describe the proposed measures, including BMPs, to control pollutants in stormwater discharges during construction, including a brief description of applicable erosion and sediment control requirements; and
Z. Describe the proposed measures to control pollutants in stormwater discharges that will occur after construction operations have been completed, including a brief description of applicable erosion and sediment control requirements.
AA. Attach a legible site map showing your facility location and boundaries, including support activities, and all waters of the state within one mile of the site, and indicate whether the application fee and first-year permit fee are attached or have already been paid.
AB. Complete the certification/signature block.

3.4 High Priority Construction Sites

This permit identifies high priority construction sites based on total disturbed acreage and receiving waters. High priority construction sites are sites that

A. are 40 disturbed acres or greater, or
B. discharge within one mile of a receiving waterbody which is identified by DEQ on the latest Section 303(d) list as impaired (i.e., not meeting water quality standards) for sediment and/or turbidity, or
C. are located within an ARC, ORW, or waterbody with a TMDL or watershed plan[10].

For discharges that enter a separate storm sewer system prior to discharge, the first water of the state to which you discharge is the waterbody that receives the water from the storm sewer system. In such a case, you are considered to discharge to the impaired water if your site is located within one mile of the separate storm sewer system outfall that discharges to the impaired water. Separate storm sewer systems include both MS4s and non-MS4s. Separate storm sewers do not include combined sewer systems or sanitary sewer systems.

You are not considered to discharge to an impaired water if your site or discharge point is located within one mile of an impaired receiving waterbody, but the point of discharge (or the separate storm sewer outfall if discharging to a separate storm sewer system) is outside the watershed of this waterbody.

3.5 Deadlines for NOI Submittal

A. Operators of new construction projects/activities that commence after the effective date of this permit must submit an NOI at least 14 days prior to commencing construction activities.

[10] This refers to TMDLs or watershed plans that assign specific requirements to stormwater discharges associated with construction activities (e.g. Lake Thunderbird Report for Nutrient, Turbidity and Dissolved Oxygen TMDLs).

B. Existing operators of on-going construction projects/activities that have active authorizations for coverage under the 2017 CGP coverage upon its expiration must submit an NOI within 90 days of the effective date of this permit. Authorization under the 2017 permit will be administratively extended for a period not to exceed 90 days from the effective date of this permit. The existing SWP3 must be updated to comply with this permit prior to the NOI submittal. If the permittee is eligible to submit an NOT (e.g., construction is finished and final stabilization has been achieved) before the 90th day, a new NOI is not required to be submitted. Operators must remain in compliance with the requirements of the 2017 permit until a new authorization is received or an NOT is submitted and accepted by DEQ.
C. Operators of on-going construction projects/activities as of the effective date of this permit that did not receive authorization to discharge under the 2017 permit are not authorized to discharge and are in violation of this permit upon its effective date. They must discontinue construction activities and discharges until they have submitted an NOI and obtained coverage under this permit. Prior to NOI submittal, an SWP3 must be developed and implemented to comply with the requirements of this permit. DEQ reserves the right to take appropriate enforcement action for any unpermitted activities or discharges that may have occurred between the time construction commenced and the authorization is granted.

3.6 Terminating Coverage

A. A complete NOT (**DEQ Form 606-003**) must be submitted to DEQ within 30 days if one or more of the following conditions have been met:
   1. All soil disturbing activities have been completed, final stabilization has been achieved on all portions of the site for which the permittee is responsible (including, if applicable, returning agricultural land to its pre-construction agricultural use) and all temporary erosion and sediment control measures have been removed.
   2. For residential subdivisions only: all soil disturbing activities have been completed, final stabilization has been completed, the ownership of all lots or sections has been transferred to new owners, the permittee is no longer responsible for continuing construction activities for the subdivision, and all temporary erosion and sediment control measures have been removed. The permittee shall not terminate their permit coverage until the new owners/operators of the individual lots within the larger common plan of development or sale are notified of their permitting requirements. The permittee must complete an NCO which shall be signed by both the permittee and new owner and documented in the permittee's SWP3.
   3. Another primary operator has assumed control over all areas of the site that have not been finally stabilized. The NOT must be submitted with the new operator's NOI.
B. DEQ will review the NOT for completeness and accuracy and may, at its discretion, inspect the site for which the NOT was submitted within 30 days of receipt of the NOT. Upon completing such inspection, DEQ will notify the permittee of any needed changes to the site conditions, or that the site has met the termination requirements under this permit. The permittee is responsible for meeting the terms of this permit until DEQ's termination letter has been issued. Only one NOT form can be submitted to DEQ by the same owner/operator within a 90-day period. Additional compliance inspections may occur within this 90-day period at the discretion of DEQ.

3.7 Contents of the NOT

A. Identify the OKR10 permit number for the stormwater discharge on the site;
B. Indicate whether termination is being requested because: a) a new owner or operator has taken over responsibility for the facility/site/project and has submitted an NOI for permit coverage; b) all construction activities have been completed and met all other requirements under OKR10 permit, including final stabilization, on all portions of the site; or c) you have obtained coverage under an individual or alternative general permit for all stormwater discharges.
C. Provide the legal name, mailing address, phone number, and email address of the operator submitting the NOT;
D. Indicate whether, if DEQ elects to perform a termination inspection, you wish to be notified when the inspection occurs and, if so, provide contact information;

E. Provide the legal name of the site or project and address (or a description of the general location if no street address is available) of the construction site/project;
F. Provide latitude and longitude of the entrance to the construction site/project. Latitude and longitude can be obtained online at DEQ's, or USGS's websites or from other mapping tools;
G. If applicable, provide the legal name, mailing address, phone number, and email address of the new operator.
H. Include a copy of the updated site map showing all completed and final plans and projects (i.e., aerial images or general site maps with project extents marked, including stabilized areas of concrete or asphalt batch plants, equipment staging yards, stockpile, borrow areas, wash-out areas, previously disturbed areas, etc.); and
I. If applicable, provide a copy of the NCO form (see Part 3.6.A.2) for each new owner/operator to whom you have sold a portion of the site. Where indicated on your NOT and NCO forms, you must include the new OKR10 owner/operator's contact information, including their name, street address, phone number and email address. Each new owner/operator is also required to prepare and submit an NOI to DEQ for review. If applicable, you must submit all NCOs to DEQ prior to submittal of the NOT or submit the NOT along with all NCOs that have been prepared during the ownership transition; and
J. Complete the certification/signature block.

3.8 Where to Submit

All written correspondence concerning this permit, including the submittal of NOIs and NOTs, shall be sent to the following address, fax or email:

Stormwater Unit of Environmental Complaints and Local Services ("ECLS")
Department of Environmental Quality ("DEQ")
707 North Robinson Ave., P.O. Box 1677
Oklahoma City, OK 73101-1677

(fax) to (405) 702-6226

(email) to ECLS-StormwaterPermitting@deq.ok.gov

Once DEQ's online NOI submission tool is made available, NOIs may be completed and submitted electronically using that tool.

All documents shall be submitted in accordance with all state and federal reporting requirements.

PART 4 EFFLUENT LIMITATIONS

The stormwater control requirements in this part apply to all discharges from construction sites, including construction support activities (e.g., concrete or asphalt batch plants), eligible for coverage under this permit. These requirements apply the national effluent limitations guidelines and new source performance standards found at 40 C.F.R. §§ 450.21 – 450.24.

4.1 Design, Installation, Implementation and Maintenance Requirements

You must design, install, implement, and maintain effective BMPs as required in Parts 4.2, 4.3 and 4.4 that minimize the discharge of pollutants from construction activities.

A. Design Requirements
   You must address the following factors in designing your stormwater controls:
   1. The expected amount, frequency, intensity, and duration of precipitation.
   2. Stormwater volume and velocity must be controlled to minimize soil erosion and pollutant discharges.
   3. The amount of soil exposed must be minimized during construction activity to minimize soil erosion and pollutant discharges.
   4. The nature of stormwater runoff and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
   5. Soil characteristics, including the range of soil particle sizes expected to be present on the site.

B. Installation Requirements
   You must ensure that all BMPs are installed in accordance with the manufacturer's recommendations or good engineering practices.

C. Maintenance Requirements
   You must ensure that all BMPs, equipment, and systems remain in effective operating condition and are protected from activities that would reduce their effectiveness. This can be accomplished by conducting routine inspection, testing, maintenance, and corrective action/repair as required by Parts 5.4 and 5.5 to avoid breakdowns or failures that may result in discharges of pollutants to surface waters. Routine maintenance, work that does not require significant repair or replacement, must be initiated immediately after discovering the problem, and completed by the close of the next work day.

4.2 Sediment and Erosion Controls

A. Direct Discharges from Stormwater Controls to Vegetated Areas
   Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration to reduce pollutant discharges, including any natural buffers established under Parts 4.2.B and 4.6.B, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.

B. Provide and Maintain Natural Buffers and Equivalent Erosion and Sediment Controls
   When any waters of the state are located on or immediately adjacent to the site (refer to Appendix D, Figure D-1), you must maintain a natural buffer zone or equivalent erosion and sediment controls from any named or unnamed receiving streams, creeks, rivers, lakes or other water bodies. The minimum width of the buffer is outlined in Table 4-1. If only a portion of the natural buffer is less than the minimum required width, you are only required to implement erosion and sediment controls that achieve the sediment load reduction equivalent to the portion that is not retained (refer to Appendix D, Figure D-2).

Table 4-1 Minimum Required Natural Buffer Widths

Type of Receiving Water	Type of Construction Site	
	Standard	High Priority
Perennial or intermittent streams, creeks, rivers or lakes	50 feet	100 feet
Ephemeral streams or drainages	50 feet	50 feet
Road ditches, county ditches, stormwater conveyance channels, storm drain inlets or sediment basins/impoundments	None	None

To ensure that the water quality protection benefits of the buffer are retained during construction, you must retain as much natural buffer as possible and you are prohibited from conducting any earth-disturbing activities within the buffer during permit coverage. You must ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls and, if necessary to prevent erosion caused by stormwater flows within the buffer, you must use velocity dissipation devices.

1. To comply with this requirement you must provide or implement and maintain one of the following:
   a. A 100-foot or 50-foot undisturbed natural buffer.
   b. An undisturbed natural buffer that is less than 100-feet or 50-feet and is supplemented by additional erosion and sediment controls that achieve the sediment load reduction equivalent to the amount of undisturbed buffer which cannot be maintained. A description of why it is infeasible to provide and maintain the full 100-foot or 50-foot undisturbed natural buffer must be included in your SWP3.
   c. Erosion and sediment controls that achieve the sediment load reduction equivalent to a 100-foot or 50-foot undisturbed natural buffer. A description of why it is infeasible to provide and maintain an undisturbed natural buffer of any size must be included in your SWP3.
2. Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from one of the following points, whichever is further landward from the water:
   a. The ordinary high water mark of the water body (refer to Appendix D, Figure D-3), defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
   b. The edge of the stream or river bank, bluff, or cliff, whichever is applicable (refer to Appendix D, Figure D-4).
3. In order to select controls that provide equivalent sediment removal rates you may complete your own calculations[11] or follow the steps outlined in Appendix D.
4. You are not required to comply with the requirements of Part 4.2.B if your site meets one of the following:
   a. Dredge and fill activity authorized under a current CWA Section 404 permit.
   b. Construction of water-dependent structure or water access area (e.g., pier, boat ramp, trail).
   c. There is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and any waters of the state located within 100-feet or 50-feet of the site.
   d. Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, unless you will remove portions of the preexisting development.

   This exemption only applies to the area where the qualifying construction activity is taking place or where the preexisting development is located and does not apply to the construction site in its entirety.

The requirement to provide and maintain a natural buffer or its equivalent is independent of (and does not substitute for) the requirement to install perimeter controls along areas of the site that will receive stormwater discharges. Additionally, this requirement is not intended to interfere with any other ordinance, regulation, statute or other provision of the law.

[11] There are a variety of models available that can be used to support your calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other models.

C. Install Perimeter Controls

Install sediment controls along those perimeter areas of your site that will receive stormwater from earth-disturbing activities. For linear construction sites where perimeter controls are infeasible (e.g., due to limited or restricted rights-of-way), you must maximize the use of other controls as necessary to minimize pollutant discharges to perimeter areas of the site and document in your SWP3 why it is impracticable in other areas of the project. Routine maintenance includes removing sediment before it has accumulated to one-half of the above-ground height of any perimeter control.

D. Minimize Sediment Track-Out

You must minimize the sediment track-out onto streets, other paved areas, and sidewalks from vehicles exiting your construction site. To comply with this requirement, you must:

1. Restrict vehicle use to properly designated exit points.
2. Use appropriate stabilization techniques at all points that exit onto paved roads.
3. Implement additional track-out controls as necessary to ensure that sediment removal occurs prior to vehicle exit.
4. Where sediment has been tracked-out from your site onto the surface of paved streets, sidewalks or other paved areas outside of your site, you must remove the deposited sediment by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface waters of the state.

Stabilization is not required for exit points at linear utility construction sites if other controls at the exit point are provided to minimize sediment track-out. Examples of other exit controls include, but are not limited to, preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit size to the width needed for vehicle and equipment usage; and avoiding establishing exit points in environmentally sensitive areas.

E. Control Discharges from Stockpiled Sediment or Soil

For any stockpiles or land clearing debris composed in whole of sediment or soil, you must comply with the following requirements:

1. Locate the piles outside of any natural buffers established under Parts 4.2.B and 4.6.B and physically separated from any stormwater conveyances, drain inlets, and area where stormwater flow is concentrated.
2. Install a sediment barrier along all down-gradient perimeter areas.
3. Provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or to minimize sediment discharge in accordance with Part 4.3.
4. Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water.
5. Unless infeasible, contain and securely protect from wind.

F. Minimize Dust

In order to avoid pollutants from being discharged into surface waters, to the extent feasible, you must minimize the generation of dust through the appropriate application of water or other dust suppression techniques.

G. Minimize the Disturbance of Steep Slopes

You must minimize the disturbance of steep slopes (i.e., slopes of 40% or greater). If it is not feasible to avoid disturbance of steep slopes, you must:

1. Divert concentrated or channelized flows of stormwater away from and around areas of disturbance on steep slopes.
2. Use specialized erosion and sediment controls for steep slopes.
3. Use stabilization practices designed to be used on steep slopes. You must comply with the stabilization requirements as required in Part 4.3.

H. Preserve Topsoil

You must preserve native topsoil on your site, unless infeasible; you must stockpile and reuse it in areas that will be stabilized with vegetation if applicable.

I. Minimize Soil Compaction

In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed, you must either

1. restrict vehicle and equipment use in these locations to avoid soil compaction; or
2. prior to seeding or planting areas of exposed soil that have been compacted, use techniques that condition the soils to support vegetative growth, if necessary.

J. Protect Storm Drain Inlets

If you discharge to any storm drain inlet that carries stormwater flow from your site directly to surface water (and it is not first directed to a sediment basin, sediment trap, or similarly effective control), and you have the authority to access the storm drain inlet, you must comply with the following requirements:

1. Install inlet protection measures that remove sediment from your discharge prior to entry into the storm drain inlet.
2. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible.

K. Constructed Stormwater Conveyance Channels

Design channels to avoid unstabilized areas on the site and to reduce erosion, unless infeasible, and minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

L. Install Sediment Basins/Impoundments

Sediment basins may also be referred to as sediment ponds or impoundments, but will be referred to hereafter as sediment basins.

1. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).
2. For common drainage locations[12] that serve an area with 10 or more acres disturbed at one time (or five acres if you discharge from a high priority construction site), temporary (or permanent) sediment basin(s) must be implemented where feasible.
    a. The sediment basin(s) must comply with the following:
        i. Sediment basin(s) must provide storage for either the calculated volume of runoff from a two-year, 24-hour storm, or 3,600 cubic feet per disturbed acre drained, whichever is greater.
        ii. When discharging from sediment basin(s), utilize outlet structures that withdraw water from the surface, unless infeasible, to minimize the discharge of pollutants.
        iii. Prevent erosion of the sediment basin and the inlet/outlet structures using erosion controls and velocity dissipation devices.
        iv. Sediment basins must be situated outside of surface waters and any natural buffers established under Parts 4.2.B and 4.6.A.
        v. Remove accumulated sediment to maintain at least 1/2 the design capacity and conduct all other appropriate maintenance to ensure the sediment basin remains in effective operating condition.
    b. When determining whether installing sediment basin(s) is feasible, you may consider factors such as site soils, slope, available area on site, etc. In any event, you must consider public safety,

[12] When computing the number of acres draining into a common location, it is not necessary to include flows from off-site areas, or flows from onsite areas that are either undisturbed or have undergone final stabilization.

especially as it relates to children, as a design factor for the sediment basin(s) and alternative sediment controls shall be used where site limitations would preclude a safe design. For drainage locations that serve 10 or more disturbed acres at one time and where temporary sediment basin(s) or equivalent controls are not attainable, smaller sediment basins and/or sediment traps should be used. Where neither sediment basin(s) nor equivalent controls are attainable due to site limitations, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down-slope boundaries of the construction area and for those side-slope boundaries deemed appropriate as dictated by individual site conditions. DEQ encourages the use of a combination of sediment and erosion control measures to achieve maximum pollutant removal.

3. For common drainage locations[12] serving less than 10 acres disturbed at one time (or five acres if you discharge from a high priority construction site), smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down-slope boundaries (and for those side-slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless sediment basin(s) providing overall storage for a calculated volume of runoff from a two-year, 24-hour storm or 3,600 cubic feet of storage per acre drained, whichever is greater, is provided. DEQ encourages the use of a combination of sediment and erosion control measures to achieve maximum pollutant removal.

M. Dewatering Practices

You are prohibited from discharging groundwater, spring water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation associated with a construction activity, unless such waters are first effectively managed by appropriate controls. Uncontaminated clear dewatering water can be discharged without being routed to a control. You must also meet the following requirements for dewatering activities:

1. Do not discharge visible floating solids or foam.
2. Use an oil-water separator or suitable filtration device that is designed to remove oil, grease, or other products if dewatering wastewater is found to contain these materials.
3. To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. In no case shall surface waters be considered part of the treatment area.
4. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 4.2.K.
5. With backwash water, either haul away for disposal or return it to the beginning of the treatment process.
6. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

4.3 Stabilization

"Temporary stabilization" refers to the stabilization of exposed portions of the site to provide temporary cover during the establishment and growth of vegetation, and/or in areas where earth-disturbing activities will occur again in the future. "Final stabilization" refers to the stabilization of exposed portions of the site using practices that provide permanent cover and qualify the permittee for permit termination. Temporary and permanent stabilization must be implemented in accordance with this part.

A. Stabilization Deadlines

1. Initiate the installation of stabilization measures immediately in any disturbed areas on any portion of the site where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days[13].
2. Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization measures have been initiated, or seven calendar days if you discharge from a high priority construction site.
3. If using vegetative stabilization, immediately after seeding or planting the area to be stabilized, you must install stabilization measures to provide effective cover to the area while vegetation is becoming established.

[13] For concrete and/or asphalt batch plants, final stabilization must be initiated upon the completion of all industrial activities.

4. If using non-vegetative stabilization, you must install or apply all such measures to provide effective cover for such exposed portions of your site.

B. Stabilization Criteria
   1. If using vegetative stabilization, temporary and final stabilization measures must provide uniform (i.e., evenly distributed without large bare areas[14]) cover that provides 70% or more of the cover that is provided by vegetation native to the site[15]. When background vegetation covered less than 100% of the ground prior to commencing earth-disturbing activities, the 70% coverage criteria is adjusted as in following example: if vegetation covered 50% of the ground prior to construction, then the requirement would be to provide a total cover at final stabilization of 70% of 50% (0.70 X 0.50 = 0.35), or 35% of the site. If using vegetative stabilization, final stabilization occurs when vegetation has been established and rooted or anchored in place.
   2. If using non-vegetative controls (e.g., hydro-mulch, erosion control blankets, riprap, geotextiles, and gabions) to stabilize exposed portions of your site, or if using such controls to temporarily protect areas that are being seeded and planted, you must provide equivalent non-vegetative stabilization measures to provide effective cover for such exposed portions of your site.
   3. Final stabilization in residential construction, final stabilization occurs when either of the following criteria is met:
      a. The homebuilder has completed final stabilization as specified above; or
      b. The homebuilder has established temporary stabilization for an individual lot prior to occupation of the home by the homeowner and informed the homeowner of the need for, and benefits of, final stabilization.
   4. Final stabilization in construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land) may be accomplished by returning the disturbed land to its pre-construction agricultural use. This does not apply to disturbed areas that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state and areas that are not being returned to their pre-construction agricultural use.

4.4 Pollution Prevention

A. General Pollution Prevention Requirements
   Implement procedures to minimize exposure to precipitation and stormwater and to prevent litter, construction material and chemicals from becoming a pollutant source for stormwater discharges. This applies to the storage, handling, application and disposal of chemicals and materials such as:
   - Soaps, detergents and solvents.
   - Pesticides, herbicides, insecticides and fertilizers.
   - Diesel fuel, oil, hydraulic fluid and other petroleum products.
   - Hazardous or toxic waste.
   - Stucco, paint, concrete, form release oils, curing compounds and other chemicals.
   - Construction and landscape materials.
   - Construction and domestic waste such as building materials and products, packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, and concrete.
   - Sanitary waste.

B. Implement procedures to prevent litter, construction material and chemicals from becoming a pollutant source for stormwater discharges.
   1. Spill Prevention and Response
      Implement preventive measures such as barriers between material storage and vehicle/equipment traffic areas. Implement procedures for expeditiously stopping, containing, and cleaning up leaks, spills and other releases, including fuels, oils and other pollutants used for equipment and vehicle operation and maintenance. Use drip pans and absorbents under or around leaky vehicles. Ensure

[14] Large bare area is defined as an area with 10 ft^2 or more with no perennial vegetative cover established.

[15] If the site has been disturbed from previous development, or preconstruction conditions were not documented, the cover provided by vegetation native to local undisturbed areas will be used. If undisturbed areas cannot be identified, the existing surrounding conditions will be evaluated (e.g., landscaping or impervious surfaces).

adequate supplies are available at all times to handle spills, leaks and disposal of any chemicals or materials. Clean up leaks, spills and contaminated surfaces immediately using dry clean-up methods and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the leak or spill to prevent a discharge or a furtherance of an ongoing discharge.

2. Emergency Spill Notification
   You are prohibited from discharging a toxic or hazardous substance or oil from a spill or other release, consistent with Part 2.3.H of this part. This permit does not relieve the permittee of the reporting requirements of 40 C.F.R. Parts 110, 117 and 302. Where a leak, spill, or other release containing a toxic or hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 C.F.R. Parts 110, 117, or 302 occurs during a 24-hour period, you must notify the NRC at (800) 424-8802 or, in the areas of Oklahoma, call the DEQ's Hotline at (800)522-0206 as soon as you have knowledge of the discharge. You must also, within seven calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.
3. Minimize Exposure
   Store chemicals in water-tight containers. Provide cover to prevent chemical containers and materials from coming into contact with precipitation and stormwater, or provide secondary containment or a similarly effective means to prevent the discharge of pollutants.
4. Good Housekeeping
   During each workday, clean up and dispose of waste in designated waste containers. Provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. Keep waste container lids closed during precipitation events when not in use, when there is a significant chance of precipitation (forecasted), and/or the site is inactive or work is not in progress. Waste containers must be covered at the end of daily work shifts and when workers are not present. For waste containers that do not have lids and could leak, provide cover to minimize exposure of wastes to precipitation or a similarly effective means designed to minimize the discharge of pollutants. Clean up immediately if containers overflow.
5. Chemical Applications
   Comply with all application and disposal requirements on the pesticide, herbicide, insecticide, fertilizer, or other chemical manufacturer's label.

C. Equipment and Vehicle Washing
   Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters prior to discharges. Ensure there is no discharge of soaps, detergents, or solvents in equipment and vehicle wash water.

D. Fertilizers Containing Nitrogen or Phosphorus
   Minimize discharges of fertilizers containing nitrogen or phosphorus by complying with the following requirements:
   1. Apply at a rate and in amounts consistent with manufacturer's specifications.
   2. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth.
   3. Avoid applying before heavy rains that could cause excess nutrients to be discharged.
   4. Never apply to frozen ground.
   5. Never apply to stormwater conveyance channels with standing or flowing water.
   6. Follow all other federal, state, tribal and local requirements regarding fertilizer application.

E. Hazardous or Toxic Waste or Oil
   1. Separate hazardous or toxic waste or oil from construction and domestic waste.
   2. Store waste in sealed containers which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, or local requirements.

3. Provide appropriately-sized secondary containment for all containers that will be stored outside to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas.
4. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended methods of disposal and in compliance with federal, state, and local requirements.

F. PFAS Management
1. Implement measures to minimize discharges of PFAS during emergency firefighting activities and post-emergency activities, including clean-up.
2. Establish specific protocols for minimizing the resuspension, conveyance, and discharge of PFAS, both during normal operations and during all maintenance and remediation activities.
3. Document all activities undertaken in fulfillment of Parts 4.4.F.1-2 in the SWP3.

G. Sanitary Waste
Position portable toilets so that they are secure and will not be tipped or knocked over, and are located away from waters of the state and stormwater inlets or conveyances including streets and roadways.

H. Washing of Applicators and Containers
This requirement applies to stucco, paint, concrete, form release oils, curing compounds, and other chemicals.
1. Direct all wash water into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.
2. Do not dump liquid wastes in storm sewers.
3. Dispose of liquid wastes in accordance with applicable requirements in Part 4.4.B or E.
4. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 4.4.B.
5. Clean up immediately if there is an overflow or if a discharge occurs outside of the leak-proof container or pit.
6. Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas.

4.5 Numeric Technology-Based Effluent Limitations

If you have discharges of stormwater from asphalt batch plants, you must comply with the limitations and monitoring requirements required in Appendix C. The numeric effluent limitations in the following Table 4-2 apply to stormwater discharges associated with any activities for asphalt batch plants, but not to concrete batch plants.

Table 4-2 Numeric Effluent Limitations for Asphalt Batch Plants

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Concentration (mg/l unless otherwise specified)		Frequency	Sample Type
	Monthly Avg.	Daily Max.		
Total Suspended Solids (TSS) [00530]	15	23	1/year	Grab
Oil and Grease	10	15	1/year	Grab
pH (standard units) [00400]	6.5-9.0		1/year	Grab

If the project lasts less than one year, you must collect at least one sample. Also, you must comply with quarterly visual monitoring and annual numeric effluent limitation monitoring, and document those results as specified in your SWP3 (see Appendix C).

Monitoring for compliance with the above numeric effluent limitations must be conducted in accordance with test procedures approved under 40 C.F.R. Part 136, including holding time and documentation requirements, and samples must be analyzed by an accredited laboratory in accordance with OAC 252:301. Where more than one test procedure is approved for the analysis of a pollutant or pollutant parameter, the

test procedure must be sufficiently sensitive to meet the minimum quantification levels (MQLs) established in OAC 252:690 or, where an MQL has not been established in OAC 252:690, to quantify the amount of pollutant present at or below the level of the above numeric effluent limitations.

4.6 Water-Quality Based Effluent Limitations for High Priority Construction Sites

A. If your construction site is considered a high priority construction site, your stormwater discharges must be controlled as necessary to meet applicable water quality standards. Operators seeking coverage under this permit shall not cause, have the reasonable potential to cause, or contribute to a violation of a water quality standard. Where a discharge is already authorized under this permit and is later determined to cause, have the reasonable potential to cause, or contribute to the violation of an applicable water quality standard, DEQ will notify the operator of such violation(s). The permittee shall take all necessary actions to ensure future discharges do not cause, have the reasonable potential to cause, or contribute to the violation of a water quality standard, and document these actions in the SWP3. If violations remain or re-occur, then coverage under this permit may be terminated by DEQ, and an alternative general permit or individual permit may be issued. Compliance with this requirement does not preclude any enforcement activity as provided by the CWA for the underlying violation. If such violation is determined, DEQ may require you to:
   1. Develop a supplemental BMP action plan describing SWP3 modifications to address adequately the identified water quality concerns;
   2. Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or
   3. Cease discharges of pollutants from construction activity and submit an alternative general permit or individual permit application.

B. All high priority construction sites must comply with the following:
   1. Natural Buffer Requirements
      You must ensure that a vegetated buffer zone of at least 100 feet is retained or successfully established/planted between the area disturbed and all perennial or intermittent streams. A vegetated buffer zone of at least 50 feet must be retained or successfully established/planted between the areas disturbed during construction and all ephemeral streams or drainages. If the nature of the construction activity or the construction site makes a buffer impossible, you must provide equivalent controls. See Appendix D for information to assist you in developing equivalent controls.
   2. Sediment Basin Requirements
      You are required to comply with the requirements as specified in Parts 4.2.L for drainage locations serving five or more acres disturbed at one time.
   3. Stabilization Requirements
      You are required to comply with the stabilization requirements as specified in Part 4.3 within seven calendar days after the temporary or permanent cessation of earth-disturbing activities.
   4. Site Inspection Requirements
      You must conduct site inspections once every seven calendar days at a minimum, and within 24 hours of a storm event of 0.5 inches or greater or within 24 hours of a discharge caused by snowmelt.
   5. Corrective Actions
      If the inspection or visual examination results indicate any permit violations, you must implement the corrective actions required in Part 5.5.

PART 5 STORMWATER POLLUTION PREVENTION PLAN (SWP3)

5.1 General Requirements

A. An SWP3 must be prepared prior to submission of an NOI. The SWP3 must be kept up-to-date throughout coverage under this permit. If an SWP3 was prepared under the previous permit, the operator must review and update the SWP3 to ensure that requirements of this permit are addressed prior to submitting an NOI for coverage under this permit.

B. SWP3s shall be prepared by a qualified person and in accordance with good engineering practices. Use of a licensed professional engineer ("PE") for SWP3 preparation is not required by the permit. However, if any part of the SWP3 involves the practice of engineering[16], then those engineering practices and designs are required to be prepared by a licensed professional engineer. The SWP3 shall identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site. The SWP3 shall describe and ensure the implementation of practices that will be used to reduce the pollutants in stormwater discharges associated with construction activity at the construction site and assure compliance with the terms and conditions of this permit.

C. When developing SWP3s, applicants must follow the procedures in Part 2.5 to determine whether listed endangered or threatened species or critical habitat would be affected by the applicant's stormwater discharges or stormwater discharge-related activities. Any information on whether listed species or critical habitats are found in proximity to the construction site must be included in the SWP3. The SWP3 must also include documentation required to support your eligibility with regard to the protection of historic properties. Any terms or conditions that are imposed under the eligibility requirements of Parts 2.1 and 2.5 or the water quality-based effluent limitations of Part 4.6 to protect listed species or critical habitat from stormwater discharges or stormwater discharge-related activities must be incorporated into the SWP3. Permittees must implement the applicable provisions of the SWP3 required under this part as a condition of this permit.

D. If multiple primary operators are associated with the same site, a single "joint SWP3" may be developed covering all operators at the site. However, each operator is responsible for compliance and updates of the SWP3 and each must have access to the most updated SWP3. Operators must also ensure directly or through coordination with other operators, that their activities do not compromise any other operators' controls and/or any shared controls.

E. If your construction site discharges within one stream mile into a receiving water which has been listed on the Clean Water Act 303(d) list of impaired waters, and your discharges contain the pollutant(s) for which the waterbody is impaired, you must document in your SWP3 how the BMPs and other controls selected for your site will control the discharge of the pollutant(s) of concern. If Part 4.6 applies to your discharge, you must include in your SWP3 the additional requirements specified in that part. The 303(d) list of Impaired Waters in Oklahoma can be found in Appendix C of the Integrated Report on the DEQ's webpage at http://www.deq.state.ok.us/WQDnew/305b_303d/index.html, or the DEQ GIS Map and Data Viewer at http://deq.maps.arcgis.com/home/index.html

F. If a TMDL or watershed plan or local compliance plan has been approved for the waterbody, you must also describe how your SWP3 is consistent with any TMDL or watershed plan or local compliance plan applicable to your discharge. Permittees must incorporate any limitations, conditions, or requirements applicable to their discharges into the SWP3 to ensure that the waste load allocations ("WLAs") or load

[16] Statutes and Rules of Oklahoma State Board of Licensure for Professional Engineers & Land Surveyors, Section 472.2 "Definitions" states "practice of engineering means any service or creative work, the adequate performance of which requires engineering education, training and experience in the application of special knowledge of the mathematical, physical and engineering sciences to such services or creative work as consultation, investigation, evaluation, planning and design of engineering works and systems, planning the engineering use of land and water, teaching of advanced engineering subjects or courses related thereto, engineering research, engineering surveys, engineering studies, and the inspection or review of construction for the purposes of assuring compliance with drawings and specifications; any of which embraces such services or work, either public or private, in connection with any utilities, structures, buildings, machines, equipment, processes, work systems, projects, and industrial or consumer products or equipment of a mechanical, electrical, chemical, environmental, hydraulic, pneumatic or thermal nature, insofar as they involve safeguarding life, health or property, and including such other professional services as may be necessary to the design review and integration of a multidiscipline work, planning, progress and completion of any engineering services."

allocations ("LAs") and/or the TMDL's associated implementation plan will be met within any timeframe established in the TMDL report or watershed plan. Monitoring and reporting of the discharges may also be required as appropriate to ensure compliance with the TMDL or watershed plan.

G. If the industrial activities associated with a concrete or asphalt batch plant are directly related to your construction site and are covered under this permit, those activities are considered part of your construction site and must be considered when developing your SWP3. You must also include the additional requirements outlined in Appendix C.

5.2 Signature, Posting a Notice, Making Plans Available, and DEQ's Notification

A. The SWP3 shall be signed and be retained on-site or at an easily accessible location in accordance with Part 6, and shall include a copy of this permit. An easily accessible location can include electronic availability, provided that the SWP3 is still readily available in a form and location that can be accessed by a reasonable person.).

B. The permittee shall post a notice near the main entrance of the construction site with the following information:
   1. The OPDES permit number for the project or a copy of the NOI if a permit number has not yet been assigned;
   2. The name and telephone number of a local contact person;
   3. A brief description of the project; and
   4. The location of the SWP3 if the site is inactive or does not have an on-site location to store the plan. If posting this information near a main entrance is infeasible due to safety concerns, the notice shall be posted in a local public building. If the construction project is a linear construction project (e.g., pipeline, highway, etc.), the notice must be placed in a publicly accessible location near where construction is actively underway and moved as necessary. This permit does not provide the public with any right to trespass on a construction site for any reason, including inspection of a site; nor does this permit require that permittees allow members of the public access to a construction site.

C. The permittee shall make SWP3s available upon request to: DEQ and/or any state, federal, or local agency approving sediment and erosion plans, grading plans or stormwater management plans; the U.S. Fish and Wildlife Service or the Oklahoma Department of Wildlife Conservation; local government officials; or the operator of a municipal separate storm sewer system receiving discharges from the site. The copy of the SWP3 that is required to be kept on-site or at an easily accessible location must be made available to DEQ for review at the time of an on-site inspection. An easily accessible location can include electronic availability, provided that the SWP3 is still readily available in a form and location that can be accessed by a reasonable person. Also, in the interest of public involvement, DEQ encourages permittees to make their SWP3s available to the public for viewing during normal business hours.

D. DEQ may notify the permittee at any time that the SWP3 does not meet one or more of the minimum requirements of this Part. Such notification shall identify those provisions of this permit that are not being met by the SWP3, as well as those requiring modification to meet the minimum requirements of this Part. Within seven calendar days of receipt of such notification from DEQ (or as otherwise provided by DEQ), the permittee shall make the required changes to the SWP3 and shall submit to DEQ a written certification that the requested changes have been made. DEQ may take appropriate enforcement action for the period of time the permittee was operating under a plan that did not meet the minimum requirements of this permit.

5.3 Contents of the SWP3

The SWP3 must include the following information, at a minimum:

A. Stormwater Team

Identify the personnel (by name or position) who are part of the stormwater team, as well as their individual responsibilities, including which members are responsible for implementation of the SWP3 and compliance with permit requirements, including Appendix C. Each member of the stormwater team must have ready access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWP3, and other relevant documents or information that must be kept with the SWP3.

B. Nature of Activities
Describe the nature of the construction activity, including the size of the property in acres (or length in miles if it is a linear construction site), latitude and longitude at the center of construction site (latitude and longitude at the starting and ending points if it is a linear construction site), the total area expected to be disturbed by the construction activities (in acres), on-site and off-site construction support activities covered by this permit, post-construction runoff coefficient, pre-construction and post-construction total impervious area (in acres), the maximum area expected to be disturbed at any one time and types of soil and fill materials. If your site will utilize construction support activities (e.g., concrete or asphalt batch plants), describe the nature of the industrial activities at your site. The SWP3 must also indicate business days and hours of operation.

C. Other Site Operators
Include a list of all other operators who will be engaged in construction activities at your site, and the areas of the site over which each operator has control. The list should specify whether these operators have obtained a separate authorization or will be operating under your authorization.

D. Contractor Certifications
This procedure is initiated only at the discretion of the permittee/primary operator with the cooperation and agreement of the contractor. The contractor certification form should be rewritten by the permittee to fit their specific objectives. Contractor certification is recommended but is not a requirement of this permit.
1. Contractors, subcontractors, builders, installers, regular suppliers, support service companies or others who are not the permittee/primary operator (hereinafter referred as "contractor") but are involved in construction activity, and have not been issued an OKR10 authorization, should execute a contractor certification, at the discretion of the permittee, which places the responsibility of implementing and complying with the permittee's/primary operator's SWP3, including BMPs and other controls, with the contractor for work performed under the authority and direction of the contractor. Contractors must ensure that activities performed under the SWP3 are protective of high priority sites according to Part 4.6.
2. Contractors must ensure that any additional SWP3 terms and conditions implementing approved TMDL reports, watershed plans or local TMDL compliance plans are applied to the sites (also see Part 5.1.F).
3. Contractors must be thoroughly familiar with and adhere to the NOI, SWP3, BMPs, and other control measures. The SWP3 must clearly identify, for each control measure identified in the plan, the party which will implement the measure. The permittee/primary operator must ensure that all contractors or others involved in construction activity are identified in the plan as being responsible for implementing stormwater control measures, and sign a copy of the contractor certification, before performing any work in the area covered by the SWP3. All contractor certifications must be included with the SWP3.
4. The contractor certification must include the name and title of the person providing the signature, the name, address, and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

E. Sequence and Estimated Schedule of Construction Activities
The SWP3 must include a description of the intended sequence of major construction activities, including a schedule of the estimated start dates and the duration of the activity, for the following:
1. Installation of stormwater control measures, and when they will be made operational, including an explanation of how the sequence and schedule for installation of stormwater control measures complies with Part 4 and of any departures from manufacturer specifications.
2. Commencement and duration of earth-disturbing activities in each portion of the site, including clearing and grubbing, mass grading, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization.
3. Temporary or permanent cessation of construction activities in each portion of the site.
4. Temporary or final stabilization of disturbed areas for each portion of the site.
5. Removal of temporary stormwater control measures and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.

6. Installation, operation, and closure of construction support activities (e.g., concrete or asphalt batch plants).

F. Site Map

Include a legible map, or series of maps, showing the following features of your site:

1. Boundaries of the property.
2. Locations where construction activities will occur, including
   a. locations where earth-disturbing activities will occur, noting any phasing of construction activities;
   b. approximate slopes, noting areas of steep slopes (i.e., greater than 40 percent), before and after major grading activities;
   c. locations where sediment, soil, or other construction materials will be stockpiled;
   d. locations of crossings of any waters of the state;
   e. designated points where vehicles will exit onto paved roads;
   f. locations of structures and other impervious surfaces upon completion of construction;
   g. locations of on-site or off-site construction support activity covered by this permit; and
   h. locations where polymers, flocculants, or other treatment chemicals will be used and stored.
3. Locations of all waters of the state within one mile of the site, including wetlands that exist within or in the immediate vicinity of the site. Indicate which waterbodies are listed as impaired, which lie within a watershed with an approved TMDL, and which are identified by the state as ARC or ORW.
4. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, and structures).
5. Drainage pattern(s) of stormwater run-on or runoff and authorized non-stormwater before and after major grading activities.
6. Stormwater and allowable non-stormwater discharge point locations, including
   a. locations where stormwater and/or allowable non-stormwater will be discharged to storm drain inlets on the site and in the immediate vicinity of the site; and
   b. locations where stormwater or allowable non-stormwater will be discharged directly to waters of the state on or near the site.
7. Locations of all potential pollutant-generating activities identified in Part 5.3.G.
8. Locations of stormwater control measures, including natural buffer areas required by Parts 4.2.B and/or 4.6.
9. If your site will utilize construction support activities (e.g., concrete or asphalt batch plants, etc.), you must also specify the boundaries of these activities, significant structures and impervious area, and the location of visual monitoring location(s). Indicate which visual monitoring locations are considered "substantially identical," if any. If applicable, specify the location of numeric effluent limitations monitoring ("NELM") sampling location(s).

G. Summary of Potential Pollutant Sources

Identify and list all pollutants and all pollutant-generating activities associated with those pollutants. You must take into account where potential spills and leaks could occur that would contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, which will be disturbed or removed during construction. If your site will utilize construction support activities (e.g., concrete or asphalt batch plants), you must also document the area at your facility where industrial materials or activities are exposed to stormwater. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by products, final products, or waste products. Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product or waste product.

H. A Copy of Permit Requirements

Include a copy of this permit (an electronic copy easily available to the stormwater team is also acceptable) and signed NOI in your SWP3.

I. Measures to Protect High Priority Sites

If you discharge to a high priority site, you must describe and implement any measures necessary to meet the requirements of Part 4.6. You must also include the following documentation as applicable:

1. Information on whether listed endangered or threatened species or critical habitat are found in proximity to the construction activity, and whether such species may be affected by the stormwater discharges or stormwater discharge-related activities (see Appendix A and Part 2.5). You must describe and implement the measures specified in Part 4.6 to protect these endangered species and threatened habitat and resource waters in the SWP3, including any equivalent sediment controls specified in Appendix D.
2. Information on whether stormwater is discharged to waters identified as ORW (see Appendix B).
3. Information on whether stormwater is discharged within one stream mile of a waterbody listed on the latest approved Clean Water Act 303(d) list as impaired. Include information on whether stormwater discharges or stormwater discharge-related activities would have an effect on water quality of the receiving waters. Describe how the BMPs and other controls selected for the site will reduce and avoid the discharges of the pollutant(s) of concern, including requirements of 2.3.F.
4. Information on whether stormwater is discharged into a waterbody with an approved TMDL or watershed plan. You must describe and implement any measures necessary to meet the requirements of the approved TMDL or watershed plan and/or associated implementation schedule established in the TMDL or watershed plan. Monitoring and reporting of discharge quality may also be required if necessary to ensure compliance with an approved TMDL or watershed plan.

J. Federal, State or Local Historic Properties
Include documentation required in Part 2.4.

K. Stormwater Control Description
Include a description of all control measures required in Part 4. The description and implementation of control measures must include the following:

1. Erosion and Sediment Controls
   a. Utilize EPA's national BMP menu and/or other references to select appropriate control measures and provide the descriptions of the selected control measures for your site. The selected control measures must meet the following requirements, as well as being in compliance with state and local regulations for your site, including:
      i. The construction-phase erosion and sediment controls should be designed to retain sediment on site to the extent practicable;
      ii. All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations;
      iii. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impact (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets);
      iv. Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%;
      v. Litter, construction debris, and construction chemicals (e.g., fuel, hydraulic fluids, etc.) exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., by screening outfalls or picking up daily);
      vi. Off-site construction storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) used solely by the permitted project are considered a part of the project and shall be addressed in the SWP3; and
      vii. Many applications of straw and hay bales for erosion and sediment control have proven ineffective, maintenance-intensive and expensive. Therefore, straw or hay bales as BMP controls within the state are not allowed. Alternatives to straw or hay bales can be silt fence, rock check dams, fiber rolls, geotextiles, compost blankets, filter fabric, gravel bags and other designs.
   b. Include natural buffers and/or equivalent sediment controls required in Parts 4.2.B or 4.6.
   c. Describe the specific vegetative and/or non-vegetative stabilization practices that will be used to achieve temporary and final stabilization on the exposed portions of your site as required in Part

4.3. Record any unforeseen circumstances that cause delays in initiation and/or completion of vegetative stabilization, with the schedule for initiating and completing stabilization.

d. Include a description of structural controls to divert flows from exposed soils, retain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. Structural controls may include but are not limited to: silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet structure protection, rock outlet structure protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins (also see Part 4.4.A). Placement of structural controls in floodplains should be avoided to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA.

e. Include sediment basin(s) required in Part 4.2.L. Include supporting documentation such as drainage pattern(s), storage calculation(s), and building specification(s).

2. Pollution Prevention

a. Describe procedures that you will follow to prevent and respond to spills and leaks (also see Part 4.4.B.1), including:

i. Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for the detection and response to spills or leaks; and

ii. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 4.4.B.2 and established under either 40 C.F.R. Parts 110, 117, or 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

iii. You may also reference the existence of Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an OPDES permit for the construction activity, provided that you keep a copy of that other plan on site.

iv. Describe waste management procedures for how you will handle and dispose of all wastes generated at your site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

v. For application of fertilizers, document any departures from the manufacturer specifications where appropriate (see Parts 4.4.B.5 and 4.4.D).

vi. Identify and document where potential spills and leaks could occur that would contribute pollutants to stormwater discharges and corresponding outfall(s) that can be affected by such spills and leaks. You must also describe the procedures that will be followed for cleaning up spills or leaks.

b. Monitoring (if applicable)

If the discharges from the facilities are subject to the visual monitoring and/or numeric limitations in Part 4.5 and Appendix C, the SWP3 must document the procedures you will follow for taking samples or observations consistent with Appendix C, including:

i. Person(s) or position(s) of person(s) responsible for conducting stormwater monitoring.

ii. Locations where samples will be collected.

iii. Documentation regarding substantially identical outfalls as specified in Appendix C.3.A.4, if applicable.

iv. Parameters for sampling and the frequency of sampling for each parameter, if applicable.

v. Procedures for sample collection, handling and analysis, including equipment to be used.

vi. Procedures for sending samples to a certified laboratory (including identifying the laboratory or laboratories to be used).

vii. Schedules for monitoring at the site.

viii. Any numeric control values, e.g., effluent limitations guidelines, TMDL or watershed plan-related requirements, or other requirements, applicable to discharges from each outfall.

ix. The normal working hours associated with the project.

x. Procedures for notifying and activating your sampling team when a discharge is occurring or is expected to occur, and to ensure that samples are taken.

c. Approved Local Plans

Permittees which discharge stormwater associated with construction activities must ensure their SWP3 is consistent with requirements specified in applicable sediment and erosion site plans of site permits, or stormwater management site plans, or site permits approved by local officials. The SWP3 must be updated as necessary to remain consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or stormwater management site plans or site permits approved by local officials from whom the permittee receives written notice.

L. Maintenance

All erosion and sediment control measures and other protective measures, including site routine maintenance specifications, identified in the SWP3 must be maintained in effective operating condition. If site inspections required by Part 4.1 identify BMPs that are not operating effectively, maintenance shall be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of stormwater controls. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If maintenance prior to the next anticipated storm event is impracticable, the situation must be documented in the SWP3 and maintenance must be scheduled and accomplished as soon as possible. Any maintenance checklists or other forms that will be used must be included in the SWP3.

M. Inspections

Include all information specified in Part 5.4. Concrete or asphalt batch plant(s) covered under this permit must also include completed Annual Comprehensive Site Compliance Evaluation Reports ("ACSCER").

N. Correction Actions

Include all information specified in Part 5.5.

O. Non-Stormwater Discharges

Identify all allowable non-stormwater discharges in Part 2.2 that will or may occur. You must document in your SWP3 all non-stormwater discharges from the site.

P. Staff Training Requirements

You must describe a stormwater employee training program and identify periodic dates (e.g., every six months[17]) for such training.

1. Prior to the commencement of earth-disturbing activities or pollutant-generating activities, whichever occurs first, the permittee must ensure that the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:
   a. Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls, including pollution prevention measures.
   b. Personnel responsible for the application and storage of chemicals (if applicable).
   c. Personnel responsible for inspections as required in Part 5.4. Such personnel must be a "qualified person" as defined in Part 1.FF.
   d. Personnel who are responsible for taking corrective actions as required in Part 5.5.
   e. Personnel who are responsible for operating and/or maintaining construction support activities (e.g., concrete or asphalt batch plants), if applicable.
2. At a minimum, personnel must be trained to understand the following if related to the scope of their job duties (e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections):
   a. The location of all stormwater controls on the site required by this permit, and how they are to be maintained;
   b. The proper procedures to follow with respect to the permit's pollution prevention requirements; and
   c. When and how to conduct inspections, record applicable findings, and take corrective actions.

[17] For construction support activities (e.g. concrete or asphalt batch plants), employee training shall be conducted at least once per year (and more often if employee turnover is high).

Q. NCOs for Individual Lots in Residential Subdivisions
The permittee shall not terminate their permit coverage until they have notified the new owners/operators of the individual lots within the larger common plan of development of their permitting requirements. The permittee must complete and sign an NCO which shall be signed by both the permittee and new owner, submit it to DEQ, and include copies of all NCOs in the SWP3 (see Part 3.6.A.2). The original or transferring owner(s)/operator(s) must also notify the new owner(s)/operator(s) of their responsibility to obtain their own permit coverage with DEQ prior to commencement of construction activities.

R. SWP3 Certification
The SWP3 must be certified, signed and dated in accordance with Part 7.6.

S. SWP3 Modification
1. Modify the SWP3, including the site map(s), within seven calendar days of any of the following conditions:
   a. Whenever new operators become active in construction activities on the site, or the construction plans, stormwater controls, or other activities have been changed at the site that are no longer accurately reflected in the SWP3, including the changes in Part 5.3.N;
   b. To reflect areas on the site map where operational control has been transferred since initiating permit coverage;
   c. If inspections or investigations determine that SWP3 modifications are necessary for compliance with this permit;
   d. Where an inspector or investigator determines it is necessary to install and/or implement additional controls at the site to meet the requirements of this permit (e.g., an approved TMDL report applies to the site); or
   e. To reflect any revision to applicable federal, state and local requirements that affect the stormwater controls implemented at the site.
2. Maintain records showing the dates of all SWP3 modifications, including the name and title of the person authorizing each change; and
3. Upon determining that a modification to the SWP3 is required, if there are multiple operators (or subcontractors) covered under this permit, the permittee must immediately notify any operators who may be impacted by the change to the SWP3.

T. On-Site Availability of SWP3
A current copy of the SWP3 must be kept on-site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by DEQ. An easily accessible location can include electronic availability, provided that the SWP3 is still readily available in a form and location that can be accessed by a reasonable person.

5.4 Inspection Requirements

A. Person(s) Responsible for Inspecting Site
The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. If you hire a third party to conduct inspections, and that party cannot implement corrective actions without prior approval, at least one member of your stormwater team must be present during inspections[18]. You are responsible for ensuring that the person who conducts inspections is a "qualified person" as defined in Part 1.FF. An inspection form shall be developed and included in your SWP3.

[18] If a member of the stormwater team cannot be present during the inspection, the report must be signed by a member of the stormwater team within 24 hours of receiving the completed report.

Table 5-1 Minimum Inspection Frequencies

Minimum Inspection Frequency	Type of Construction Site	
	Standard	High Priority
Routine Inspection Frequency	You must conduct a site inspection when discharge is occurring • once every 14 calendar days, and • within 24 hours of the end of a storm event of 0.5 inches or greater, and • within 24 hours of a discharge generated by snowmelt.	You must conduct a site inspection when discharge is occurring • once every seven calendar days, and • within 24 hours of the end of a storm event of 0.5 inches or greater, and • within 24 hours of a discharge generated by snowmelt.
Reduced Inspection Frequency	You must conduct a site inspection once per month.	

B. Frequency of Inspections
At a minimum, you must conduct a site inspection once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater and within 24 hours of a discharge generated by snowmelt, unless you are discharging from a high priority site subject to Part 4.6.B.4. If a storm event of 0.5 inches or greater, or snowmelt, causes your site to discharge, within 24 hours of the end of the storm event or the beginning of the snowmelt discharge you must conduct a site inspection when the discharge is occurring.[19] Minimum inspection frequencies are outlined in Table 5-1.

C. Reductions in Inspection Frequency
You may reduce the frequency of inspections to once per month in areas of your site where you have initiated vegetative stabilization that meets the criteria in Part 4.3, once you have completed the initial seeding or planting, and provided protection with non-vegetative cover pursuant to Part 4.3, or you have installed temporary, non-vegetative stabilization that meet the criteria in Part 4.3. If construction activity resumes at a later date, the inspection frequency shall immediately increase to that required in Part 5.4.B. Reduced inspection frequencies are outlined in Table 5-1.

D. Areas That Need to be Inspected
During your site inspection, you must at a minimum inspect the following areas of your site:
1. All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 4.3;
2. All stormwater controls or management devices (including pollution prevention measures) installed at the site to comply with this permit;
3. Material, waste, borrow, or equipment storage and maintenance areas that are covered by this permit;
4. All areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater;
5. All points of discharge from the site, including exit points where sediment could be tracked out from the site; and
6. All locations where stabilization measures have been implemented.
7. All areas where construction support activities (e.g., concrete or asphalt batch plants) will be taking place, if applicable.

E. Requirements for Inspections
During your site inspection, you must at a minimum:

[19] Inspections are only required during the site's normal working hours. For the purposes of the inspection requirements in this Part, conducting an inspection "within 24 hours" means that once the conditions in Part 5.4.B are met, you have 24 hours from that time to conduct an inspection. For clarification, the 24 hours is counted as a continuous passage of time, and not counted by business hours (e.g., three business days of eight hours each). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

1. Check whether all erosion, sediment, and pollution prevention controls are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges. Determine if any controls need to be replaced, repaired, or maintained in accordance with Part 5.3.L;
2. Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;
3. Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 4.2, 4.3, and/or 4.4 (if applicable);
4. Check the points of discharge and, if applicable, the banks of any surface waters flowing within your property boundaries or immediately adjacent to your property, for signs of visible erosion and sedimentation (i.e., sediment deposits) that have occurred and are attributable to your discharge. If not accessible, nearby downstream locations must be inspected to the extent practicable;
5. Identify any incidents of noncompliance observed;
6. If a discharge is occurring during your inspection, you are required to:
   a. Identify all points of the property from which there is a discharge.
   b. Observe and document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including color, odor, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollutants.
   c. Document whether your stormwater controls are operating effectively and describe any such controls that are clearly not operating as intended or are in need of maintenance.
7. Based on the results of your inspection and necessary maintenance initiate corrective action under Part 5.5.

F. Inspection Report
1. You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the
   a. inspection date;
   b. names and titles of personnel making the inspection;
   c. summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 5.4.D;
   d. the applicable rain gauge or weather station readings that triggered the inspection if you conducted an inspection because of rainfall measuring 0.5 inches or greater; and
   e. the description or reason you found any portion of your site, including the specific location, to be unsafe if you are unable to complete a site inspection due to safety concerns.
2. Each inspection report must be signed in accordance with Part 7.7.

G. Record Keeping Requirements
You are required to keep copies of all inspection reports on-site or at an easily accessible location, so that they can be made available at the time of an on-site inspection or upon request by DEQ. An easily accessible location can include electronic availability, provided that the SWP3 is still readily available in a form and location that can be accessed by a reasonable person.

5.5 Corrective Action Requirements

A. Requirements for Taking Corrective Action
You must complete the following corrective actions (see definition in Part 1.J). In all circumstances, you must immediately take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events. Failure to implement the required corrective action constitutes a permit violation under Part 7.1.
1. For any of the following conditions on your site, you must review and revise the selection, design, installation, and implementation of your control measure(s) to ensure that the condition is eliminated and will not be repeated in the future. You must install a new or modified control and make it operational, or complete the repair, by no later than seven calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven calendar days, you must document in your records why it is infeasible to complete the installation or repair within the seven calendar-day timeframe and document your schedule for installing the stormwater controls and making it operational as soon as practicable after the seven calendar-day timeframe. Where your corrective

actions result in changes to any of the stormwater controls or procedures documented in your SWP3, you must modify your SWP3 accordingly within seven calendar days of completing corrective action work.

a. A required stormwater control was never installed, was installed incorrectly or not in accordance with the requirements in Parts 4 and/or 5.
b. A stormwater control needs to be repaired or replaced (beyond routine maintenance required in Part 5.3.L).
c. You become aware, or DEQ determines, that the controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 4.
d. An unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this or another ODPES permit) has occurred.
e. If you are subject to the monitoring requirements in Part 4.5 and Appendix C, samples indicate that you have a discharge that exceeds the applicable effluent limitation.

B. Corrective Action Report

1. Within 24 hours of discovering the occurrence of one of the triggering conditions in Part 5.5.A.1 at your site, you must provide a record of the following:
   a. Which triggering condition was identified at your site.
   b. The nature of the condition identified.
   c. The date and time of the condition identified and how it was identified.
2. Within seven calendar days of discovering the occurrence of one of the triggering conditions in Part 5.5.A.1 at your site, you must complete a record of the following:
   a. Any follow-up actions taken to review the design, installation, and maintenance of stormwater controls, including the dates such actions occurred.
   b. A summary of stormwater control modifications taken or to be taken, including a schedule of activities necessary to implement changes, and the date the modifications are completed or expected to be completed.
   c. Notice of whether SWP3 modifications are required as a result of the condition identified or corrective action.
3. Each corrective action report must be signed in accordance with Part 7.6.

C. Recordkeeping Requirements

You are required to keep current copies of all corrective action reports on-site or at an easily accessible location, so that they can be made available at the time of an on-site inspection or upon request by DEQ. An easily accessible location can include electronic availability, provided that the SWP3 is still readily available in a form and location that can be accessed by a reasonable person.

PART 6 RETENTION OF RECORDS

6.1 Documents

The permittee shall retain copies of the SWP3 and all reports required by this permit, and records of all data used to complete the NOI to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by request of DEQ at any time.

6.2 Accessibility

The permittee shall retain a copy of the SWP3 required by this permit (including a copy of the permit language) at the construction site (or other local location accessible to DEQ; a state or local agency approving sediment and erosion plans, grading plans, or stormwater management plans; local government officials; or the operator of a municipal separate storm sewer receiving discharges from the site) from the date of project initiation to the date of final stabilization. Permittees with day-to-day operational control over SWP3 implementation shall have a copy of the latest SWP3 available at a central location on-site for the use of all operators and those identified as having responsibilities under the SWP3 whenever they are on the construction site.

6.3 Addresses

All written correspondence concerning this permit, including the submittal of NOIs and NOTs, shall be sent to DEQ at the address, fax or email in Part 3.8.
All documents shall be submitted in accordance with all state and federal reporting requirements.

Part 7 Standard Permit Conditions

7.1 Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the C.W.A. within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement. Penalties for violations of permit conditions are provided below:

A. Criminal Penalties
   1. Negligent Violations.
      The OPDES Act provides that any person who negligently violates permit conditions is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both (27A O.S. § 2-6-206 (G) (1)).
   2. Knowing Violations.
      The OPDES Act provides that any person who knowingly violates permit conditions is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than three years, or both (27A O.S. § 2-6-206 (G) (2)).
   3. Knowing Endangerment.
      The OPDES Act provides that any person who knowingly violates permit conditions, and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury, is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both (27A O.S. § 2-6-206 (G)(3)).
   4. False Statement.
      The OPDES Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the OPDES, or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the OPDES, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or by both (27A O.S. § 2-6-206 (G)(4)).

B. Civil Penalties.
   The OPDES Act provides that any person who violates a permit condition is subject to a civil penalty not to exceed $10,000 per day for each violation (27A O.S. § 2-6-206 (F)).

C. Administrative Penalties.
   The OPDES Act provides that any person who violates a permit condition is subject to an administrative penalty, not to exceed $10,000 per day of violation nor shall the maximum amount exceed $125,000 per violation [see 27A O.S. § 2-6-206 (E)].

7.2 Continuation of the Expired General Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued and remain in full force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

A. Reissuance or replacement of this permit, at which time the permittee must comply with the NOI conditions of the new permit to maintain the authorization to discharge; or
B. The permittee's submittal of an NOT; or
C. Issuance of an individual permit for the permittee's discharges; or
D. A formal permit decision by DEQ not to reissue this general permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.

Any new applicant who applies for coverage after the expiration date of this general permit will not be granted permit coverage until this general permit is reissued.

7.3 Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

7.4 Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

7.5 Duty to Provide Information

The permittee shall furnish to DEQ, or an authorized representative of DEQ, within a reasonable time, any information which DEQ may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to DEQ upon request, copies of records required to be kept by this permit.

7.6 Signatory Requirements

All NOIs, NOTs, reports, certifications (except the contractor certification under Part 5.3.D) or information either submitted to DEQ or the operator of an MS4, or that this permit requires be maintained by the permittee, shall be signed as follows:

A. All NOIs and NOTs shall be signed as follows.
   1. For a corporation - by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:
      (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or
      (b) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
   2. For a Limited Liability Company (LLC) - by a member, managing or otherwise; or
   3. For a partnership - by a general partner; or
   4. For a sole proprietorship - by the proprietor (owner); or
   5. For a municipality, state, federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this Section, a principal executive officer of a federal agency includes:
      (a) The chief executive officer of the agency; or
      (b) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of the EPA).

B. All reports required by this permit and other information requested by DEQ or authorized representative of DEQ shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   1. The authorization is made in writing by a person described above and submitted to DEQ;
   2. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   3. The signed and dated written authorization must be included in the SWP3.

C. Changes to Authorization.
If an authorization under Part 3.1 is no longer accurate because a different operator has responsibility for the overall operation of the construction site, a new NOI satisfying the requirements of Part 3.1 must be submitted to DEQ prior to or together with any reports, information, or applications to be signed by an authorized representative. The change in authorization must be submitted within the time frame specified in Part 3.5 and sent to the address specified in Part 3.8.

D. Any person signing documents under this Part shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7.7 Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the CWA or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") of 1980, 42 U.S.C. § 9601 *et seq.*

7.8 Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

7.9 Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

7.10 Requiring an Individual Permit or an Alternative General Permit

A. DEQ may require any person authorized by this permit to apply for and/or obtain either an individual OPDES permit or an alternative OPDES general permit. Any interested person may petition DEQ to take action under this paragraph. Where DEQ requires a permittee authorized to discharge under this permit to apply for an individual OPDES permit, DEQ shall notify the permittee in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the permittee to file the application, and a statement that on the effective date of issuance or denial of the individual OPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications shall be submitted to the address in Part 3.8. DEQ may grant additional time to submit the application upon request of the applicant. If a permittee fails to submit in a timely manner an individual OPDES permit application as required by DEQ under this paragraph, then the applicability of this permit to the individual OPDES permittee is automatically terminated at the end of the day specified by DEQ for application submittal.

B. Any permittee authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. In such cases, the permittee shall submit an individual permit application in accordance with the requirements of 40 C.F.R. § 122.26 (c) (1) (ii), with reasons supporting the request, to DEQ at the address in Part 3.8 of this permit. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by the permittee are adequate to support the request.

C. When an individual OPDES permit is issued to a permittee otherwise subject to this permit, or the permittee is authorized to discharge under an alternative OPDES general permit, the applicability of this permit to the individual OPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual OPDES permit is denied to an operator otherwise subject to this permit or the operator is denied coverage under an alternative OPDES general permit, the applicability of this permit to the individual OPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by DEQ.

7.11 State/Tribal Environmental Laws

A. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state/tribal law or regulation under authority preserved by Section 510 of the Clean Water Act.
B. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.
C. Construction activities on Indian Country lands are regulated by the EPA Region 6 office located in Dallas, Texas. Applicants seeking coverage for construction or surface disturbing activities located on Indian Country land should contact the EPA Region 6 office.

7.12 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions and requirements of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when necessary to achieve compliance with the conditions of this permit.

7.13 Inspection and Entry

The permittee shall allow DEQ or an authorized representative of DEQ, or in the case of a construction site that discharges through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

A. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
B. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
C. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).
D. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

7.14 Monitoring and Records

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
B. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of DEQ at any time.
C. Records of monitoring information shall include:
    1. The date, exact place, and time of sampling or measurements;
    2. The individual(s) who performed the sampling or measurements;

3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

D. Monitoring must be conducted according to test procedures approved under 40 C.F.R Part 136 unless another method is required under 40 C.F.R subchapters N or O.

E. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

7.15 Reporting Requirements

A. Planned changes.
The permittee shall give notice to DEQ as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in § 122.29(b); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under § 122.42(a)(1).
3. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;

B. Anticipated noncompliance.
The permittee shall give advance notice to DEQ of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Transfers.
This permit is not transferable.

D. Monitoring reports.
Monitoring results shall be reported at the intervals specified elsewhere in this permit.
1. Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by DEQ for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016, all reports and forms submitted in compliance with this section must be submitted electronically by the permittee to DEQ or initial recipient, as defined in 40 C.F.R 127.2(b), in compliance with this section and 40 C.F.R Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.
2. If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R Part 136, or another method required for an industry-specific waste stream under 40 C.F.R subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by DEQ.
3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by DEQ in the permit.

E. Compliance schedules.
Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Twenty-four hour reporting.

1, The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A report shall also be provided within five days of the time the permittee becomes aware of the circumstances. The report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times), and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (*e.g.,* manhole, combine sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2025 or an EPA-approved alternative date (*see* 40 C.F.R 127.24(e) or (f)), all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the permittee to DEQ or initial recipient, as defined in 40 C.F.R 127.2(b), in compliance with this section and 40 C.F.R Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R Part 127. 40 C.F.R Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of 40 C.F.R Part 127, permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. DEQ may also require permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

2. The following shall be included as information which must be reported within 24 hours under this paragraph.
   a. Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 C.F.R. § 122.41(g).
   b. Any upset which exceeds any effluent limitation in the permit.
   c. Violation of a maximum daily discharge limitation for any of the pollutants listed by DEQ in the permit to be reported within 24 hours. (See 40 C.F.R. § 122.44(g).)
3. DEQ may waive the written report on a case-by-case basis for reports under paragraph 7.15.F.2 of this section if the oral report has been received within 24 hours.

G. Other noncompliance.

The permittee shall report all instances of noncompliance not reported under paragraphs 7.15.D - F of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 7.15.F. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph 7.15.F and the applicable required data in appendix A to 40 C.F.R Part 127. As of December 21, 2025 or an EPA-approved alternative date (see 40 C.F.R 127.24(e) or (f)), all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the permittee to DEQ or initial recipient, as defined in 40 C.F.R 127.2(b), in compliance with this section and 40 C.F.R Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R Part 127. 40 C.F.R Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of 40 C.F.R Part 127, permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. DEQ may also require permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

H. Other information.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to DEQ, it shall promptly submit such facts or information.

I. Identification of the initial recipient for NPDES electronic reporting data.
The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in appendix A to 40 C.F.R Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its web site and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. § 127.2(c). EPA will update and maintain this listing.

7.16 **Bypass**

A. Definitions.
1. **Bypass** means the intentional diversion of waste streams from any portion of a treatment facility.
2. **Severe property damage** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

B. Bypass not exceeding limitations.
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 7.16.C and D of this section.

C. Notice.
1. Anticipated bypass.
If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least 10 days before the date of the bypass. As of December 21, 2025 or an EPA-approved alternative date (see 40 C.F.R. 127.24(e) or (f)), all notices submitted in compliance with this section must be submitted electronically by the permittee to DEQ or initial recipient, as defined in 40 C.F.R. 127.2(b), in compliance with this section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. 40 C.F.R. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of 40 C.F.R. Part 127, permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.
2. Unanticipated bypass.
The permittee shall submit notice of an unanticipated bypass as required in paragraph 7.15.F of this section (24-hour notice). As of December 21, 2025 or an EPA-approved alternative date (see 40 C.F.R. 127.24(e) or (f)), all notices submitted in compliance with this section must be submitted electronically by the permittee to DEQ or initial recipient, as defined in 40 C.F.R. 127.2(b), in compliance with this section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. 40 C.F.R. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of 40 C.F.R. Part 127, permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

D. Prohibition of bypass.
1. Bypass is prohibited, and DEQ may take enforcement action against a permittee for bypass, unless:
   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
   c. The permittee submitted notices as required under paragraph 7.16.C of this section.
2. DEQ may approve an anticipated bypass, after considering its adverse effects, if DEQ determines that it will meet the three conditions listed above in paragraph 7.16.D.1 of this section.

7.17 **Upset** -

A. Definition.
Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

B. Effect of an upset.
An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 7.17.C of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

C. Conditions necessary for a demonstration of upset.
A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
1. An upset occurred and that the permittee can identify the cause(s) of the upset;
2. The permitted facility was at the time being properly operated; and
3. The permittee submitted notice of the upset as required in paragraph 7.15.F.2.a of this section (24 hour notice).
4. The permittee complied with any remedial measures required under paragraph 7.4 of this section.

D. Burden of proof.
In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

7.18 Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Part 8 Re-opener Clause

8.1 Potential to Cause or Contribute to a Violation

If there is evidence indicating that the stormwater discharges authorized by this permit cause, have the reasonable potential to cause, or contribute to a violation of a water quality standard, the permittee may be required to obtain an individual permit or an alternative general permit in accordance with Part 7.10, or the permit may be modified to include different limitations and/or requirements.

8.2 Permit Modification or Revocation

Permit modification will be conducted according to the Oklahoma Uniform Environmental Permitting Act at Oklahoma Statutes, Title 27A, O.S., § 2-14-101 *et seq.*, OAC, 252:4-7 and 252:606, and 40 C.F.R. §§ 122.62, 122.63, 122.64, and 124.5, incorporated and adopted by reference in OAC 252:606-1-3(b).

APPENDIX A – OKLAHOMA AQUATIC RESOURCES OF CONCERN (ARC)

A. Sensitive waters and watersheds for federally listed species, as defined by the U.S. Fish and Wildlife Service for the OPDES OKR10 Construction General Permit (CGP) for stormwater discharges from construction activity

Grand (Neosho) River - A two-mile corridor (one mile from each bank) of the main stem of the Grand (Neosho) River above its confluence with Tar Creek. This corridor includes portions of Ottawa and Craig Counties.

Cimarron River - A two-mile corridor (one mile from each bank) of the main stem of the Cimarron River from the US Hwy-77 Bridge in Logan County upstream to and including Beaver County. This corridor includes river segments in Beaver, Harper, Kingfisher, Logan, Major, Woods, and Woodward counties.

South Canadian River - A two-mile corridor (one mile from each bank) of the main stem from the Eufaula Reservoir flood pool upstream to the northern border of Custer County. This corridor includes river segments in Blaine, Caddo, Canadian, Cleveland, Custer, Grady, Hughes, McClain, McIntosh, Pittsburg, Pontotoc, Pottawatomie, and Seminole counties.

Muddy Boggy River - A two-mile corridor (one mile from each bank) of the main stem of the Muddy Boggy River which includes portions of Choctaw, Atoka, and Coal Counties.

Kiamichi River – The watershed of the Kiamichi River is upstream from the Hugo Reservoir. This watershed includes portions of Choctaw, Pushmataha, Atoka, Pittsburg, Latimer, and Leflore Counties.

Little River – The watershed of the Little River includes portions of Choctaw, LeFlore, Pushmataha and McCurtain Counties.

Glover River – The watershed of the Glover River includes portions of Pushmataha and McCurtain Counties.

Mountain Fork River – The watershed of the Mountain Fork River is above Broken Bow Reservoir and includes portions of Leflore and McCurtain Counties.

Northeast HUC-11 Watersheds – The watersheds are identified by the following 11-digit Hydrologic Unit Codes: 11070206030, 11070206060, 11070207190, 11070208070, 11070209020, 11070209030, 11070209040, 11070209050, 11070209060*, 11070209070, 11070209100, 11070209110 and 11070209120. These watersheds include portions of Ottawa, Craig, Delaware, and Mayes Counties.

* *This HUC does not contain a known Ozark cavefish cave. It was included because it is entirely surrounded by 11 digit HUCs with known Ozark cavefish caves; therefore, we assume that Ozark cavefishes likely occupy this portion of the watershed as well.*

Elk River – A two-mile corridor (one mile from each bank) of the Elk River which includes portions of Delaware County.

Spring River – A two-mile corridor (one mile from each bank) of the Spring River which includes portions of Ottawa County.

Verdigris River – A two-mile corridor of the main stem from the dam of Lake Oologah to the confluence of the Arkansas River which includes river segments in Rogers, Wagoner, and Muskogee counties.

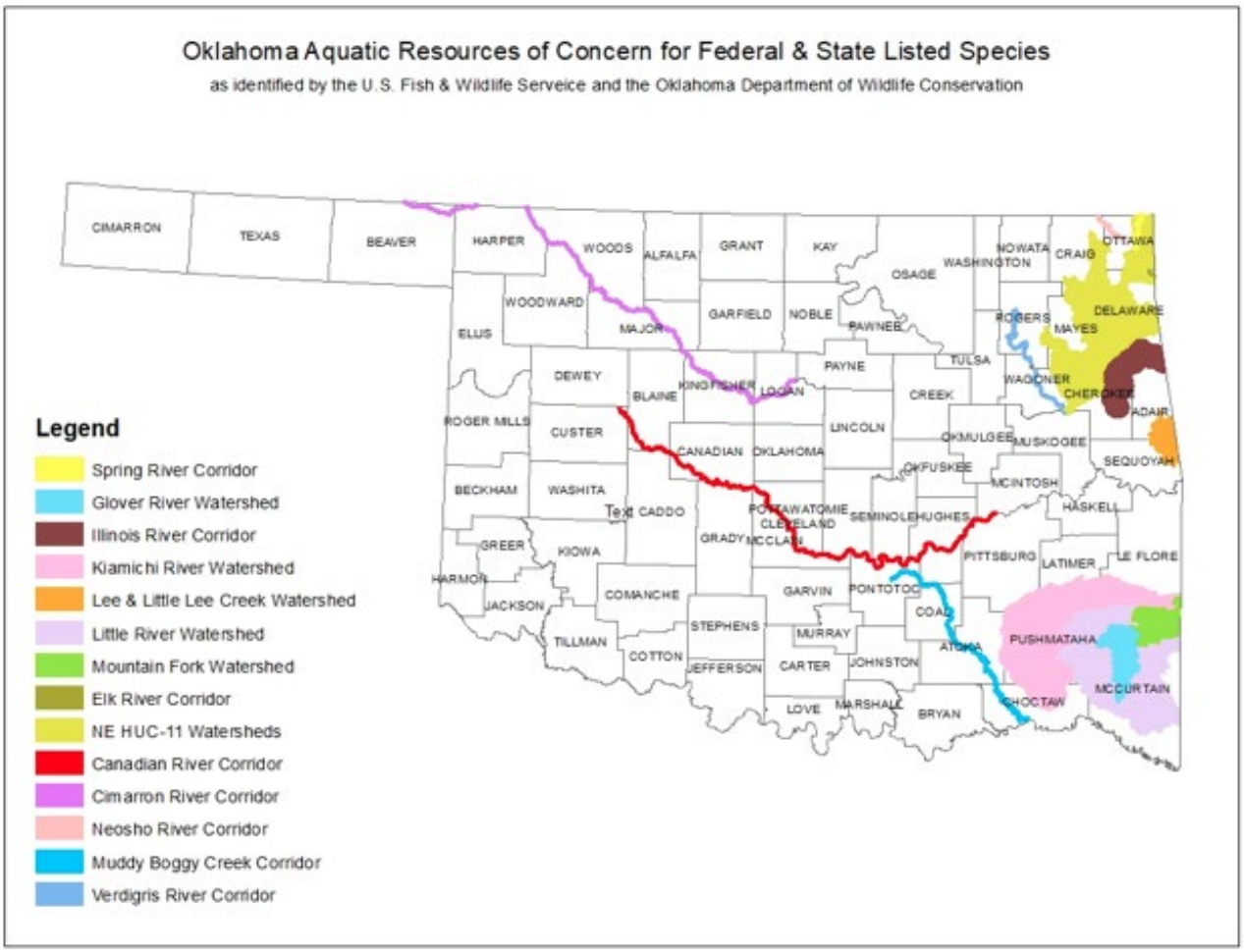
B. Sensitive waters and watersheds for state listed species, as defined by the Oklahoma Department of Wildlife Conservation for the OPDES OKR10 Construction General Permit (CGP) for stormwater discharges from construction activity

Illinois River – A 10-mile corridor (five miles from each bank within the watershed) of the main stem of the Illinois River above Tenkiller Reservoir. This corridor includes portions of Cherokee, Delaware, and Mayes Counties.

Lee and Little Lee Creeks – The watershed of Lee Creek and Little Lee Creek which includes portions of Sequoyah and Adair Counties.

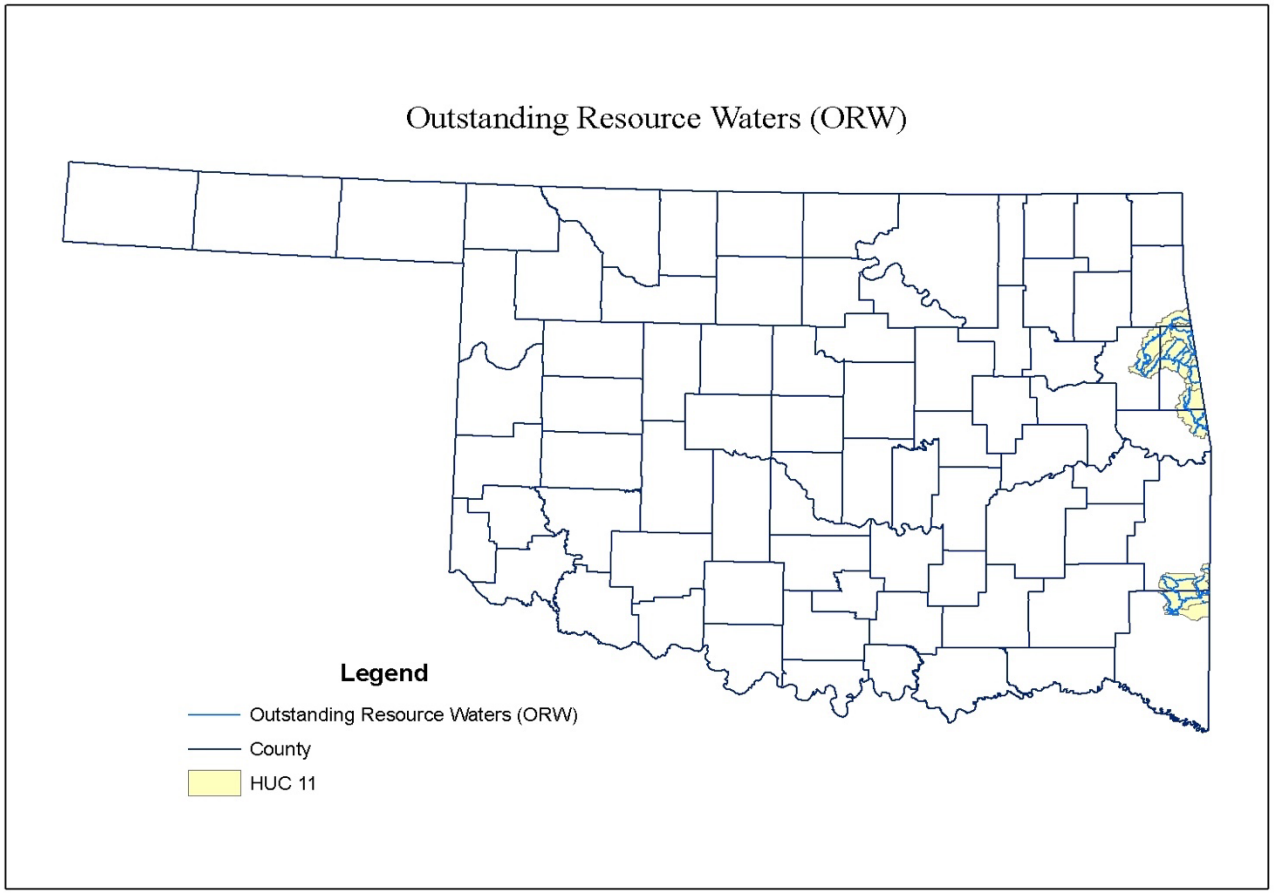
Note: *No stormwater discharge-sensitive endangered or threatened species occur in the following counties: Alfalfa, Beckham, Carter, Cimarron, Comanche, Garfield, Garvin, Grant, Greer, Johnston, Kiowa, Lincoln, Murray, Nowata, Okfuskee, Oklahoma, Okmulgee, Rogers, Stephens, Texas, Washington, or Washita.*

Figure A- 1 Oklahoma Aquatic Resources of Concern for Federal & State Listed Species



APPENDIX B – OUTSTANDING RESOURCE WATERS (ORW)

Figure B- 1 Outstanding Resource Waters Statewide Map



Outstanding Resource Waters Details

Figure B- 2 Illinois River & Lee Creek Watershed

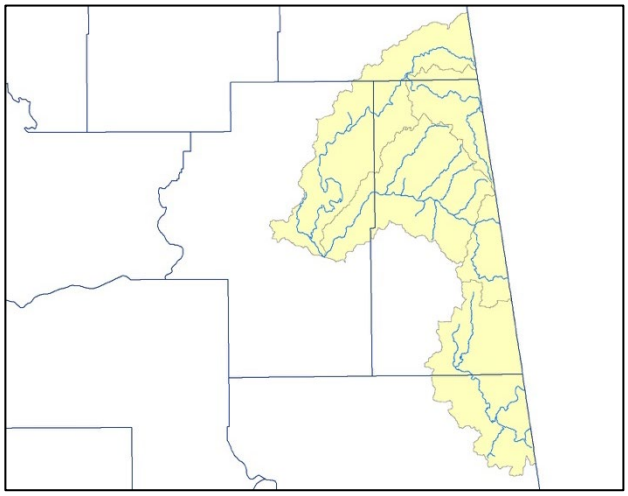
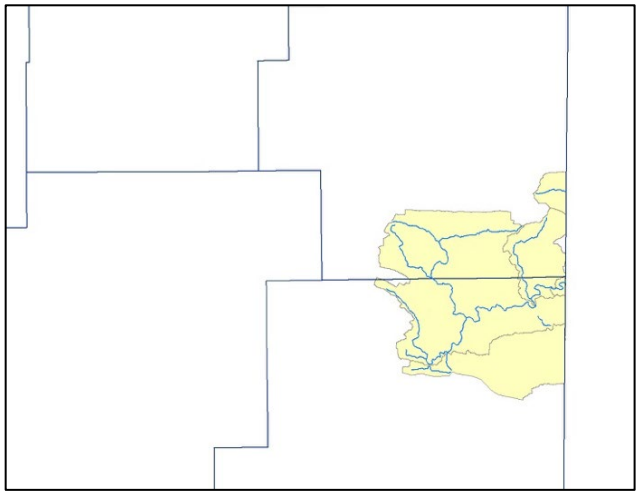


Figure B- 3 Mountain Fork River



APPENDIX C – ADDITIONAL REQUIREMENTS FOR CONSTRUCTION SUPPORT ACTIVITIES

C.1. Sampling Data

Provide a summary of any existing stormwater discharge sampling data taken at your facility. All stormwater sampling data collected during the term of this permit must also be summarized and included in this part of the SWP3. The SWP3 shall document the procedures for conducting the types of analytical monitoring specified by this permit.

C.2 Comprehensive Site Compliance Evaluation

The concrete or asphalt batch plant(s) covered under this permit must conduct an annual site compliance evaluation and complete an ACSCER using Form 606-005B. ACSCERs are not required to be submitted to DEQ, unless specifically requested. However, ACSCERs must be maintained with the SWP3s and made available to DEQ upon request. At a minimum, your documentation of the ACSCER must include the scope of the inspections, the name(s) of personnel making the inspections, the date(s) of the inspections, and major observations relating to the implementation of the SWP3. Major observations should include: the location(s) of discharges of pollutants from the site; BMPs that need to be maintained; BMPs that failed to operate as designed or that proved inadequate for a particular location; additional BMPs that are needed to address any conditions requiring corrective action identified during the inspection; previously unidentified discharges from the site; previously unidentified pollutants in existing discharges; evidence of, or the potential for, pollutants entering the drainage system; evidence of pollutants discharging to receiving waters at all facility outfall(s); the condition of and around the outfall, including flow dissipation measures to prevent scouring; and any required revisions to the SWP3 resulting from the inspection.

A. Frequency of the Comprehensive Site Compliance Evaluation
   You must conduct a comprehensive site compliance evaluation at least once a year. The inspections must be conducted by qualified personnel with at least one member of your stormwater pollution prevention team participating in the comprehensive site inspections. The qualified personnel you use may be either your own employees or outside consultants that you have hired, provided they meet the requirements specified in Part 1.FF. If you decide to conduct more frequent inspections, your SWP3 must specify the frequency of inspections.
B. Scope of the Comprehensive Site Compliance Evaluation
   Your inspections must include all areas where construction materials or activities are exposed to stormwater, as identified in the SWP3 and areas where spills and leaks have occurred within the past three years.

C.3 Monitoring Requirements

All concrete and asphalt batch plants covered under this permit will be subject to quarterly visual monitoring. Numeric effluent limitation monitoring ("NELM") is required once per year if your asphalt batch plant(s) is covered under this permit. These specific monitoring requirements and limitations are applied to the discharge at facilities with co-located activities. Where stormwater from the co-located activities is commingled, the monitoring requirements and limitations are additive.

A. Quarterly Visual Monitoring
   The requirements and procedures for quarterly visual monitoring are applicable to all concrete and asphalt batch plants covered under this permit.
   1. You must perform and document a quarterly visual monitoring of a stormwater discharge associated with industrial activity from each outfall, unless the outfall is substantially identical as outlined in Part C.3.A.4. If no storm event resulted in runoff from the facility during a monitoring quarter, you are excused from visual monitoring for that quarter provided you document in your monitoring records that no runoff occurred. You must sign and certify the documentation in accordance with Part 7.6 of the permit.
   2. Your visual examination must be made during daylight hours (e.g., normal working hours). The visual examinations must be made of samples collected within the first 30 minutes of when the runoff or snowmelt begins discharging from your facility. The examination must document observations of

color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution. The examination must be conducted in a well-lighted area. No analytical tests are required to be performed on the samples. All such samples must be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for the entire permit term.

The following table is an example of what you should look for in a visual monitoring sample.

Table C-1 Visual Monitoring of Stormwater Discharges

Parameter	Method	Results
Color and Extent	Visual	Clear, yellow, red, blue, green, brown, black, milky, etc.
Odor	Smell	None, earthy, sewage, musky, rotten eggs, petroleum, etc.
Clarity or Turbidity	Come up with your own test such as: clean off the label from a one-liter or similar size clear plastic or glass bottle, fill the bottle with the sample, and try to see things through it.	1) can't see through the bottle 2) can see through but could not read newsprint 3) can see through and can read newsprint 4) pretty clear, but not as clear as bottled water 5) as clear as bottled water
Floating solids	Visual	Yes/no - describe what they are.
Settled solids	Use same one-liter or similar size plastic or glass bottle	Tablespoons or cups of material or millimeters of solids on bottom after at least 60 minutes
Suspended solids	Look through the container.	Describe what do you see?
Foam	Visual	Yes - how thick is the foam? How much of the surface does it cover? What color is the foam? Or No
Oil sheen	Visual	Color and extent
Other obvious indicators of stormwater pollution	Indicate what you observed that would lead a reasonable person to believe that the stormwater was polluted.	Describe what do you see?

3. You must maintain your visual examination reports onsite with the SWP3. At a minimum, the report must include the examination date and time, locations, personnel, the nature of the discharge (i.e., runoff or snow melt), results of observations of the stormwater discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution), and probable sources of any observed stormwater contamination. If applicable, the report shall include why it was not possible to take samples within the first 30 minutes. The report must be signed in accordance with Part 7.7.
4. If your facility has two or more outfalls that you believe discharge substantially identical effluents, based on similarities of the industrial activities and control measures, exposed materials that may significantly contribute pollutants to stormwater, and runoff coefficients of the outfalls' drainage areas, you may visually monitor the effluent of just one of the outfalls and report that the results also apply to the substantially identical outfall(s). You may monitor selected substantially identical outfall(s) on a rotating basis. For this to be permissible, you must describe each outfall authorized by this permit and the rationale for any substantially identical outfall determinations, including the locations of the outfalls, why the outfalls are expected to discharge substantially identical effluents, estimates of the size of the drainage area (in square feet) for each of the outfalls, and an estimate of the runoff coefficient of the drainage areas (low: under 40 percent; medium: 40 to 65 percent; high: above 65 percent).

B. Numeric Effluent Limitation Monitoring ("NELM")
If your facility has discharges of stormwater from an asphalt batch plant, you must comply with the limitations and monitoring requirements of Part 4.5 (also see Table 4-2) for all discharges containing asphalt batch plant runoff.
1. Monitoring Periods
If the project takes less than one year to complete, you shall collect at least one sample. Otherwise, you must start to collect your grab samples and analyze the samples annually within the following time periods:
The yearly monitoring periods are from January 1st to December 31st.
2. Collection and Analysis of Samples
You must assess your sampling requirements on an outfall-by-outfall basis.
   a. All required monitoring must be performed on a measurable storm event (defined as a storm that is greater than 0.1 inch in magnitude) that results in an actual discharge from your site and that follows the preceding measurable storm event by at least 72 hours. The 72-hour storm interval does not apply if you are able to document that less than a 72-hour interval is representative for local storm events during the sampling period.
   b. Take a minimum of one grab sample within the first 30 minutes of the discharge resulting from a measurable storm event. If it is not practicable to take the sample during the first 30 minutes, the sample must be collected as soon as practicable after the first 30 minutes. You must document in your SWP3 why it was not possible to take samples within 30 minutes. If the sampled discharge commingles with process or non-process wastewater, attempt to sample the stormwater discharge before it mixes with the non-stormwater.
   c. In the case of snowmelt, samples must be taken during a period with a measurable discharge.
   d. Auto-samplers or passive samplers may be used to collect grab samples. If auto-samplers or passive samplers are used, samples must still be taken in accordance with paragraphs a-c above.
3. Storm Event Data
For each monitoring event, except snowmelt monitoring, you must provide the date and duration (in hours) of the storm event(s); rainfall measurements or estimates (in inches) of the storm event; time (in days) since the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sample. For snowmelt monitoring, you must identify the date of the sampling event.
4. Follow-up Monitoring Requirements if Discharge Exceeds Numeric Effluent Limit
You must conduct follow-up monitoring within 30 calendar days (or during the next qualifying runoff event should none occur within 30 days) of implementing corrective action(s) taken pursuant to Part 5.5 in response to an exceedance of a numeric effluent limit contained in this permit. Monitoring must be performed for any pollutant(s) that exceeds the effluent limit. You must continue to monitor, at least quarterly, until your discharge is in compliance with the effluent limit or until DEQ waives the requirement for additional monitoring. You must include the results of follow-up monitoring in the corrective action report.

C.4 Reporting

A. Reporting Results of NELM
1. Submit analytical monitoring results by March 1st of the year following the monitoring period.
2. If required, you must submit NELM results obtained from each outfall associated with industrial activity via the electronic Discharge Monitoring Report (eDMR). Instructions on how to register as a Preparer or Signatory for eDMR, as well as how to prepare and submit eDMR, can be found on DEQ website at https://www.deq.ok.gov/water-quality-division/electronic-reporting/. Assistance is also available by contacting DEQ at (405)702-8100 or deqreporting@deq.ok.gov .

B. Annual Comprehensive Site Compliance Evaluation Reporting Requirement
1. An ACSCER using Form 606-005B must be completed each year by March 1st, beginning the year after the effective date of this permit ACSCERs are not required to be submitted to DEQ, unless specifically requested. However, ACSCERs must be maintained with the SWP3 and made available to DEQ upon request. If your permit becomes effective less than one month from the end of the yearly

monitoring period, your first monitoring period starts with the next respective annual monitoring period. Failure to complete an ACSCER each year by March 1 will be considered a violation of the permit.

2. The report must include requirements specified in Part C.2 of this Appendix and be certified by an authorized representative of your facility (see Part 7.6)

C. Visual monitoring results, employee training, inspector certifications/licenses, routine facility inspections and other supporting documentation must be retained with the SWP3. Do not submit unless requested to do so by the DEQ.

APPENDIX D – BUFFER REQUIREMENTS

The purpose of this Appendix is to assist you in complying with the requirements of this permit regarding the establishment of natural buffers or equivalent sediment controls.

Step 1.

Determine the total width of natural buffer required.

When any waters of the state are located on or immediately adjacent to the site (refer to Figure D-1), you must maintain a natural buffer zone or equivalent erosion and sediment controls from any named or unnamed receiving streams, creeks, rivers, lakes or other water bodies. The minimum width of the buffer is outlined in Table 4-1. If only a portion of the natural buffer is less than the minimum required width, you are only required to implement erosion and sediment controls that achieve the sediment load reduction equivalent to the portion that is not retained (refer to Figure D - 2).

Table 4-1 Minimum Required Natural Buffer Widths[20]

Type of Receiving Water	Type of Construction Site	
	Standard	High Priority
Perennial or intermittent streams, creeks, rivers or lakes	50 feet	100 feet
Ephemeral streams or drainages	50 feet	50 feet
Road ditches, county ditches, stormwater conveyance channels, storm drain inlets or sediment basins/impoundments	None	None

[20] Table 4-1. from Part 4.2.B has been duplicated here for reference.

Figure D-1 Example of Earth-Disturbing Activities within 50 feet of surface water.

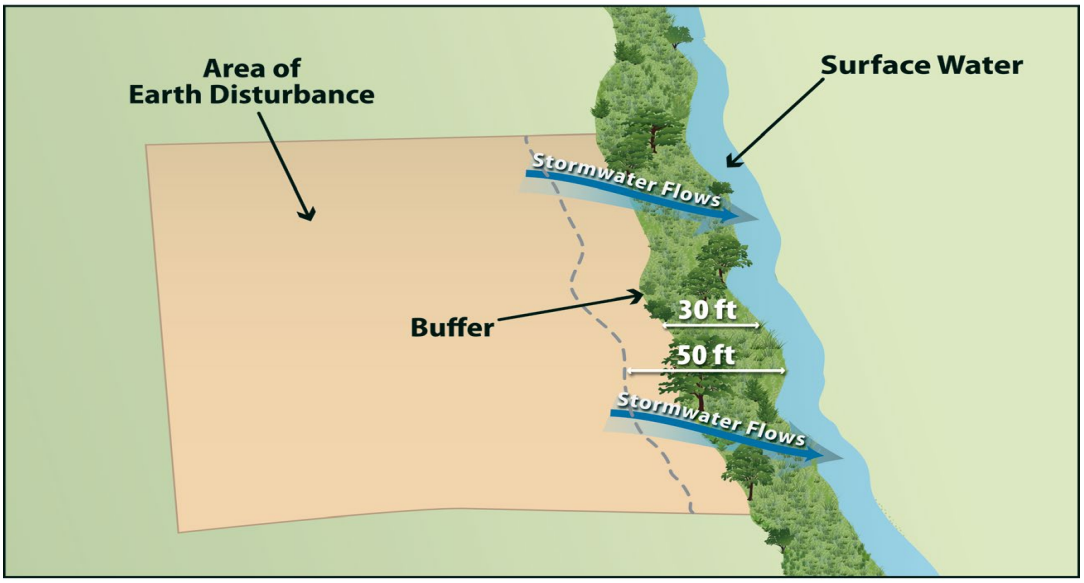
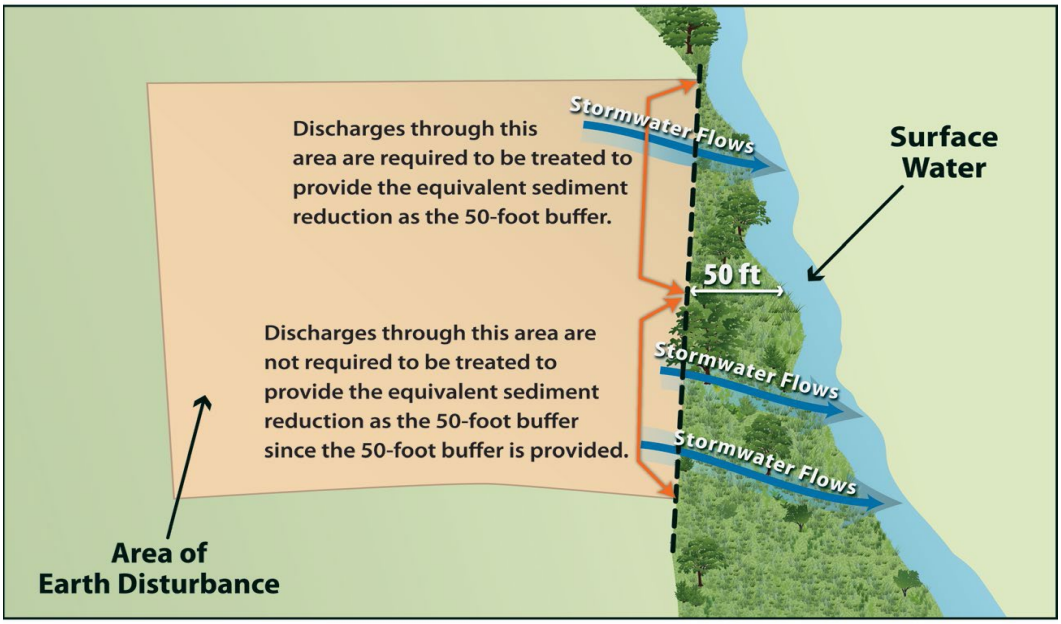


Figure D-2 Example of how to comply with buffer requirements.



Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from one of the following points, whichever is further landward from the water:

1. The ordinary high-water mark of the water body (refer to Figure D - 3), defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
2. The edge of the stream or river bank, bluff, or cliff, whichever is applicable (refer to Figure D - 4).

You may find that specifically measuring these points is challenging if the flow path of the surface water changes frequently, thereby causing the measurement line for the buffer to fluctuate continuously along the path of the waterbody. Where this is the case, DEQ suggests that rather than measuring each change or deviation along the

water's edge, it may be easier to select regular intervals from which to conduct your measurement. For instance, you may elect to conduct your buffer measurement every five to 10 feet along the length of the water.

Figure D-3 Buffer measurement from the ordinary high water mark of the water body.

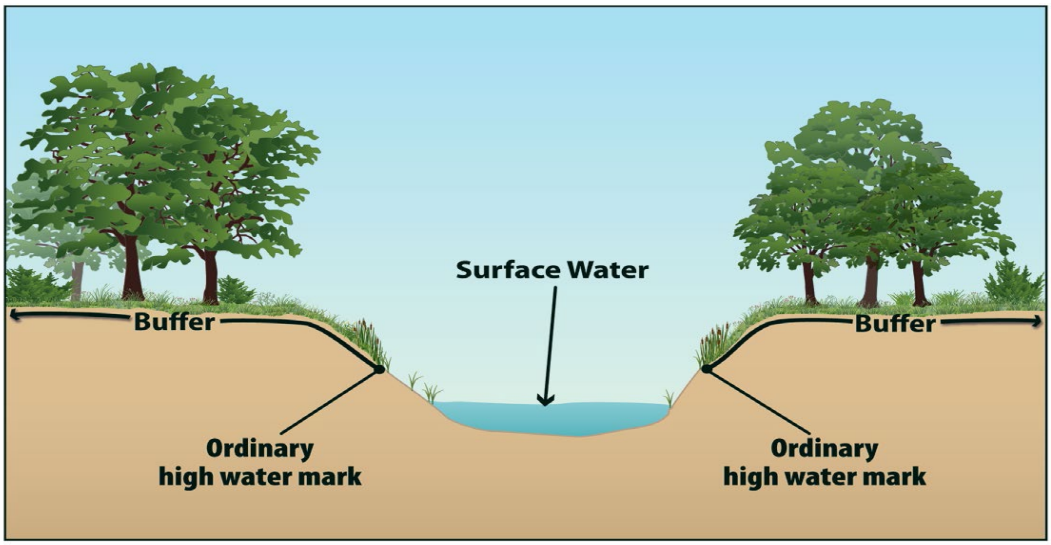
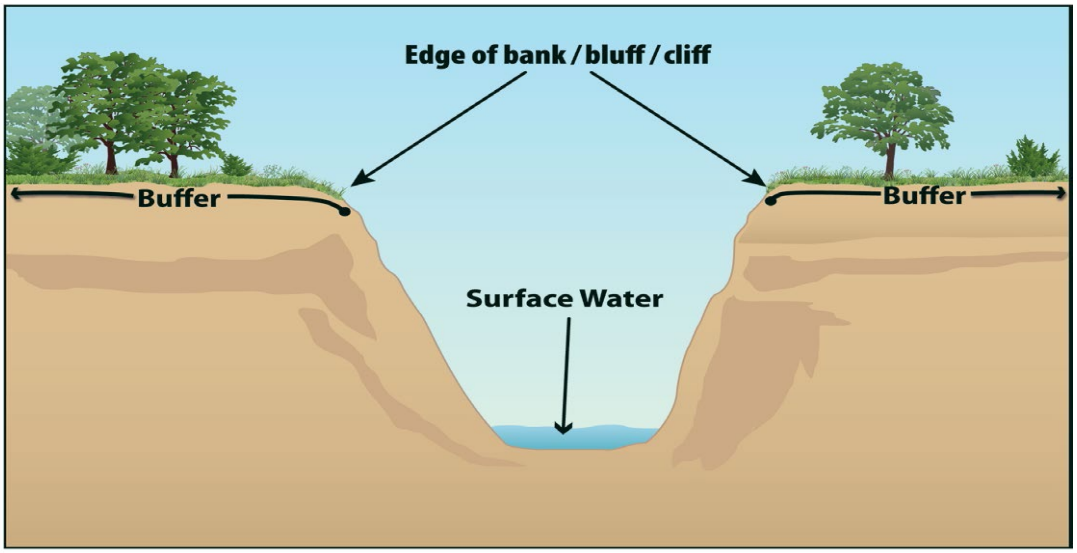


Figure D-4 Buffer measurement from the edge of the bank, bluff, or cliff.



Step 2.

Determine the amount of natural buffer equivalent required.

If you are retaining a buffer of less than 100 feet or 50 feet, you may take credit for the removal that will occur from the reduced buffer and only need to provide additional controls to make up the difference between the removal efficiency of a 100-foot or 50-foot buffer and the removal efficiency of the narrower buffer. For example, if you are retaining a 30-foot buffer, you can account for the sediment removal provided by the 30-foot buffer retained, and you will only need to design controls to make up for the additional removal provided by the 20-foot of buffer that is not being provided. To do this, you would plug the width of the buffer that is retained into RUSLE or another model, along with other stormwater controls that will together achieve a sediment reduction equivalent to a natural 50-foot buffer.

The amount of natural buffer equivalent required shall be rounded up to the nearest integer of 50 if utilizing the sediment removal efficiency rates in Tables H-1 through H-4.

$$\text{Buffer}_{\text{total}} - \text{Buffer}_{\text{retained}} = \text{Buffer}_{\text{equivalent}}$$

Step 3.

Determine the existing sediment removal efficiency of the site.

The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of sediment controls used to reduce the discharge of sediment prior to the buffer. DEQ has simplified this calculation by developing buffer performance tables covering a range of vegetation and soil types for the areas covered by the permit. See Attachment 1, Tables D - 1 through D - 4. Alternatively, you may do your own calculation of the effectiveness of the natural buffer based upon your site-specific conditions and may use this number as your sediment removal equivalency standard to meet instead of using Tables D – 1 through D - 4. This calculation must be documented in your SWP3.

Note: buffer performance values in Tables D - 1 through D - 4 represent the percent of sediment captured through the use of perimeter controls (e.g., silt fences) and 100-foot or 50-foot buffers at disturbed sites of fixed proportions and slopes. Using Tables D - 1 through D - 4 (see Attachment 1), you can determine the sediment removal efficiency of a 100-foot or 50-foot buffer for your geographic area by matching the vegetative cover type and the type of soils that predominate at your site. For example, if your site is located in Oklahoma City (see Table D - 1), and your buffer vegetation corresponds most closely with that of fescue grass, and the soil type at your site is best typified as sand, your site's sediment removal efficiency would be 90 percent.

If a portion of the buffer area adjacent to the surface water is owned by another party and is not under your control, you can treat the area of land not under control as having the equivalent vegetative cover and soil type that predominates on the portion of the property on which your construction activities are occurring.

Alternatively, you may do your own calculation of the effectiveness of the required buffer based upon your site-specific conditions, and may use this number as your sediment removal equivalency standard to meet instead of using Tables D – 1 through D - 4. This calculation must be documented in your SWP3.

Step 4.

Once you have determined the estimated sediment removal efficiency of the required buffer for your site, you must next select stormwater controls that will provide an equivalent sediment load reduction.

To make the determination that your controls and/or buffer area achieve an equivalent sediment load reduction as the required buffer, you may use stormwater controls listed in Tables D -1 through D - 4 to select a designed control(s) or use a model or other type of calculator. There are a variety of models available that can be used to support your calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other models.

Step 5.

Calculate total sediment removal rate efficiency of the selected BMPs. When more than one alternative BMP must be used to compensate for the loss of the buffer strip, this amount should be calculated using the following formula:

$$\textit{Removal Rate}_1 + (1 - \textit{Removal Rate}_1)(\textit{Removal Rate}_2) = \textit{Removal Rate}_{total}$$

For example, if we are installing two BMPs that both have a 70% removal rate, the total removal rate is:

$$0.70 + (1 - 0.70)(0.70) = 0.91 = 91\%$$

Step 6.

Compare sediment removal efficiency rates to determine compliance. The equivalent sediment removal efficiency rate (Step 5) must be greater than or equal to the existing sediment removal efficiency rate (Step 3). The final step is to document in your SWP3 the information you relied on to calculate the equivalent sediment reduction as an undisturbed natural buffer. DEQ will consider your documentation to be sufficient if it generally meets the following:

For Step 3: refer to the Table in Attachment 1 that you used to derive your estimated buffer sediment removal efficiency performance. Include information about the buffer vegetation and soil type that predominate at your site, which you used to select the sediment load reduction value in Tables D - 1 through D - 4. Or, if you conducted a site-specific calculation for sediment removal efficiency, provide the specific removal efficiency, and the information you relied on to make your site-specific calculation.

For Steps 4-5: (1) Specify a single designed stormwater control (see Table D - 1 – D - 4) or other stormwater controls that you used to estimate sediment load reductions from your site. Specify a model or other type of calculator that you used to support your calculation if any; and (2) the results of calculations showing how your controls will meet or exceed the sediment removal efficiency from Step 3.

ATTACHMENT 1

Sediment Removal Efficiency Tables: Percent of sediment removal was calculated for a 200-foot runoff area with a 100-foot buffer, and a 100-foot runoff area with a 50-foot buffer. DEQ recognizes that very high removal efficiencies, even where theoretically achievable by a 50-foot or 100-foot buffer, may be very difficult to achieve in practice using alternative controls. Therefore in the tables below, DEQ has limited the removal efficiencies to a maximum of 90%. Efficiencies that were calculated at greater than 90% are shown as 90%, and this is the minimum percent removal that must be achieved by alternative controls.

Best Management Practices Defined:

- Fescue: Buffer strip (100 feet or 50 feet) at the end of the overland flow path of Fescue grass, the area has not been grazed
- Grama Grass: Buffer strip (100 feet or 50 feet) at the end of the overland flow path of Grama grass, at least the third year after seeding
- Range Grass: Buffer zone (100 feet or 50 feet) at the end of the overland flow path of a generic low production range grass
- Weeds: Buffer zone (100 feet or 50 feet) at the end of the overland flow path of at least five years of growth of generic weeds started from volunteer germination
- 12” Wattle: 12-inch straw sock or wattle installed at the base of the runoff area
- 6” Wattle: Six-inch straw sock or wattle installed at the end of the overland flow path
- Roll Material: Erosion control blanket placed over the disturbed area
- Silt Fence: Full retardance fabric silt fence installed at the end of the overland flow path
- Straw Mulch: Straw mulch applied over the disturbed area, 4,000 lbs/acre
- Gravel Berm: Gravel bag berm installed on a level contour to intercept sheet flows.

Figure D-5 Soils Defined

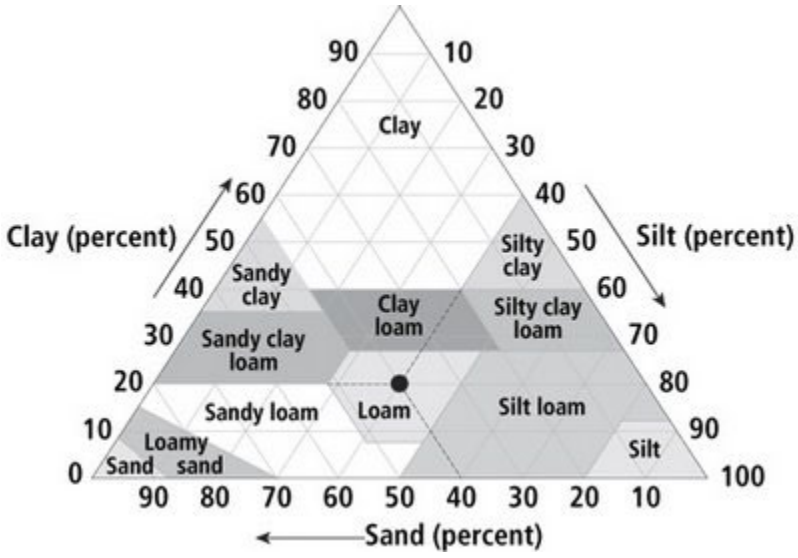


Table D- 1 Estimated Buffer Performance of Blade Fill in Oklahoma County, Oklahoma

Best Management Practices**	Estimated % Sediment Removal *										
	Clay	Silty Clay	Silty Clay Loam	Clay Loam	Silt Loam	Loam	Sandy Loam	Silt	Sandy Clay Loam	Loamy Sand	Sand
Fescue (100' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Fescue (50' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Grama Grass (100' Buffer)	80	83	81	82	81	81	80	79	82	85	87
Grama Grass (50' Buffer)	79	79	82	80	81	80	80	79	80	83	76
Range Grass (100' Buffer)	89	87	90	90	90	90	90	90	90	90	89
Range Grass (50' Buffer)	88	86	90	90	90	90	90	90	90	98	87
Weeds (100' Buffer)	68	67	70	71	71	72	73	72	73	73	63
Weeds (50' Buffer)	67	65	69	68	70	71	71	70	72	67	53
12" Wattle	71	61	56	67	45	57	70	20	76	82	73
6" Wattle	61	52	48	59	41	52	68	20	73	66	29
Roll Material	90	90	90	90	90	90	90	90	90	90	90
Silt Fence	61	52	48	59	41	52	68	20	73	66	66
Straw Mulch	76	75	77	73	78	75	77	81	76	77	88
Gravel Bag Berm	80	68	64	75	50	62	74	27	80	84	86

* Applicable for sites less than nine percent slope

** Characterization focuses on the under-story vegetation

Table D- 2 Estimated Buffer Performance of Blade Cut in Oklahoma County, Oklahoma

Best Management Practices**	Estimated % Sediment Removal *										
	Clay	Silty Clay	Silty Clay Loam	Clay Loam	Silt Loam	Loam	Sandy Loam	Silt	Sandy Clay Loam	Loamy Sand	Sand
Fescue (100' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Fescue (50' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Grama Grass (100' Buffer)	60	58	74	69	78	77	73	74	72	57	16
Grama Grass (50' Buffer)	59	53	67	62	74	30	69	74	70	38	11
Range Grass (100' Buffer)	87	85	89	90	90	90	90	89	89	86	86
Range Grass (50' Buffer)	85	84	88	89	90	90	90	89	87	84	84
Weeds (100' Buffer)	57	52	62	63	64	64	66	62	26	52	43
Weeds (50' Buffer)	53	51	58	58	62	64	66	62	58	46	39
12" Wattle	63	53	55	65	46	62	75	20	77	54	11
6" Wattle	28	26	45	46	42	58	63	17	38	7	1
Roll Material	83	84	85	83	86	85	85	90	85	86	86
Silt Fence	28	26	45	46	42	58	63	17	38	7	1
Straw Mulch	44	42	45	42	46	44	46	55	43	48	47
Gravel Bag Berm	76	65	61	72	48	62	73	22	77	82	82

* Applicable for sites less than nine percent slope

** Characterization focuses on the under-story vegetation

Table D- 3 Estimated Buffer Performance of Blade Fill Tulsa County, Oklahoma

Best Management Practices**	Estimated % Sediment Removal *										
	Clay	Silty Clay	Silty Clay Loam	Clay Loam	Silt Loam	Loam	Sandy Loam	Silt	Sandy Clay Loam	Loamy Sand	Sand
Fescue (100' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Fescue (50' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Grama Grass (100' Buffer)	81	82	82	82	81	81	80	79	82	85	87
Grama Grass (50' Buffer)	79	80	82	82	81	81	80	78	80	84	76
Range Grass (100' Buffer)	90	87	90	90	90	90	90	89	90	90	89
Range Grass (50' Buffer)	88	86	89	90	90	90	90	90	90	88	86
Weeds (100' Buffer)	50	50	48	51	50	50	49	47	51	51	48
Weeds (50' Buffer)	43	48	47	49	48	47	49	45	49	44	40
12" Wattle	68	60	53	65	44	57	69	18	73	80	71
6" Wattle	57	50	47	58	40	53	66	18	71	62	30
Roll Material	90	90	90	90	90	90	90	90	90	90	90
Silt Fence	57	50	47	58	40	53	66	18	71	62	30
Straw Mulch	72	75	75	73	76	74	74	79	92	75	76
Gravel Bag Berm	77	66	60	71	49	62	72	24	77	82	84

* Applicable for sites less than nine percent slope
** Characterization focuses on the under-story vegetation

Table D- 4 Estimated Buffer Performance of Blade Cut in Tulsa County, Oklahoma

Best Management Practices**	Estimated % Sediment Removal *										
	Clay	Silty Clay	Silty Clay Loam	Clay Loam	Silt Loam	Loam	Sandy Loam	Silt	Sandy Clay Loam	Loamy Sand	Sand
Fescue (100' Buffer)	90	90	90	90	90	90	90	90	90	90	90
Fescue (50' Buffer)	90	89	90	90	90	90	90	90	90	90	90
Grama Grass (100' Buffer)	60	59	73	68	78	77	73	88	72	56	13
Grama Grass (50' Buffer)	58	55	68	63	76	75	70	73	69	39	11
Range Grass (100' Buffer)	87	85	89	90	90	90	90	87	90	86	85
Range Grass (50' Buffer)	85	84	88	89	90	90	90	88	87	84	84
Weeds (100' Buffer)	52	50	58	59	63	64	66	63	56	42	40
Weeds (50' Buffer)	49	45	45	56	59	61	59	56	49	41	36
12" Wattle	62	55	55	63	45	61	75	20	77	55	8
6" Wattle	25	27	45	50	41	57	63	18	38	6	1
Roll Material	82	83	84	80	86	90	85	90	84	86	86
Silt Fence	40	27	45	50	74	57	63	18	38	6	1
Straw Mulch	35	41	42	27	43	39	40	51	42	43	44
Gravel Bag Berm	73	63	58	69	47	61	70	20	74	79	82

* Applicable for sites less than nine percent slope
** Characterization focuses on the under-story vegetation

APPENDIX E – STORMWATER RUNOFF COEFFICIENTS

Table E- 1 Typical Runoff Coefficients for 5- to 10-year Frequency Design

	Description of Area	Runoff Coefficients
	Business	
1	Downtown areas	0.70-0.95
2	Neighborhood areas	0.50-0.70
	Residential	
3	Single-family areas	0.30-0.50
4	Multiunits, detached	0.40-0.60
5	Multiunits, attached	0.60-0.75
6	Residential (suburban)	0.25-0.40
7	Apartment dwelling areas	0.50-0.70
	Industrial	
8	Light areas	0.50-0.80
9	Heavy areas	0.60-0.90
10	Parks, cemeteries	0.10-0.23
11	Playgrounds	0.20-0.35
12	Railroad yard areas	0.20-0.40
13	Unimproved areas	0.10-0.30
	Streets	
14	Asphalt	0.70-0.95
15	Concrete	0.80-0.95
16	Brick	0.70-0.85
17	Drives and walks	0.75-0.85
18	Roofs	0.75-0.95
	Lawns, Sandy soil	
19	Flat, 2%	0.05-0.10
20	Average, 2-7%	0.10-0.15
21	Steep, 7%	0.15-0.20
	Lawns, Heavy soil	
22	Flat, 2%	0.13-0.17
23	Average, 2-7%	0.18-0.22
24	Steep, 7%	0.25-0.35

Viessman, W., Jr., G. L. Lewis, J. W. Knapp, 1989, *Introduction to Hydrology,* 3rd ed., Harper and Row, New York.

APPENDIX F – EFFLUENT LIMITATIONS SUMMARY

Table F- 1 Effluent Limitations Summary

General Requirement	Standard Site	High Priority Site
Part 4.1 Design, Installation and Maintenance Requirements		
Design	Design, install, implement, and maintain effective BMPs that minimize the discharge of pollutants from construction activities by addressing the following while designing your stormwater controls: -precipitation -stormwater volume and velocity -minimizing exposed soil -nature of stormwater runoff and run-on -soil characteristics	
Installation	Ensure that all BMPs are installed in accordance with the manufacture's recommendations or good engineering practices.	
Maintenance	Ensure that all BMPs remain in effective operating condition and are protected from activities that would reduce their effectiveness. Conduct routine inspection, testing, maintenance, and corrective action/repair to avoid breakdowns or failures that may result in discharge of pollutants. Routine maintenance must be completed by the close of the next work day.	
Part 4.2 Sediment and Erosion Controls		
Direct discharges from your stormwater controls to vegetated areas.	Direct discharges from your stormwater controls to vegetated areas of your site and use velocity dissipation devices to prevent erosion.	
Provide and maintain natural buffers and equivalent erosion and sediment controls.	Standard	High Priority
	When any waters of the state are located on or immediately adjacent to the site, you must leave at least 50 feet of natural buffer zone, as measured from the top of the bank to disturbed portions of your site, from any receiving waters.	Buffer must be at least 100 feet for discharges to perennial or intermittent streams, creeks, rivers, or lakes; or at least 50 feet from ephemeral streams and drainages.
	No natural buffer zone is required for discharges to road ditches, county ditches, stormwater conveyance channels, storm drain inlets, or sediment basins/impoundments.	
Install perimeter controls.	Install sediment controls along those perimeter areas of your site that will receive stormwater from earth-disturbing activities.	
Minimize sediment track-out.	You must minimize the sediment track-out onto streets, other paved areas, and sidewalks from vehicles exiting your construction site. To comply with this requirement, you must: 1. Restrict vehicle use to properly designated exit points. 2. Use appropriate stabilization techniques at all points that exit onto paved roads. Implement additional track-out controls as necessary. 3. Where sediment has been tracked-out from your site, you must remove the deposited sediment by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day.	
Control discharges from stockpiled sediment or soil.	For any stockpiles or land clearing debris composed in whole of sediment or soil, you must comply with the following requirements:	

	1. Locate the piles outside of any natural buffers and physically separated from any stormwater conveyances, drain inlets, or areas where stormwater flow is concentrated. 2. Install a sediment barrier along all down-gradient perimeter areas. 3. Provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or to minimize sediment discharge. 4. Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or surface water. 5. Unless infeasible, contain and securely protect from wind.
Minimize dust.	Minimize the generation of dust through the appropriate application of water or other dust suppression techniques.
Minimize the disturbance of steep slopes.	You must minimize the disturbance of steep slopes (i.e., slopes of 40% or greater). If it is not feasible to avoid disturbance of steep slopes, you must: 1. Divert concentrated or channelized flows of stormwater away from and around areas of disturbance on steep slopes. 2. Use specialized erosion and sediment controls for steep slopes. 3. Use stabilization practices designed to be used on steep slopes.
Preserve topsoil.	You must preserve native topsoil on your site, unless infeasible; you must stockpile and reuse it in areas that will be stabilized with vegetation if applicable.
Minimize soil compaction.	In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed, you must either: 1. Restrict vehicle and equipment use in these locations to avoid soil compaction. 2. Prior to seeding or planting areas of exposed soil that have been compacted, use techniques that condition the soils to support vegetative growth, if necessary.
Protect storm drain inlets.	If you discharge to any storm drain inlet that carries stormwater flow from your site directly to surface water you must comply with the following requirements: 1. Install inlet protection measures that remove sediment from your discharge prior to entry into the storm drain inlet. 2. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible.
Constructed stormwater conveyance channels.	Design channels to avoid unstabilized areas on the site and minimize erosion of channels and their embankments, discharge points, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any discharge point to provide a non-erosive flow velocity.
Install sediment basins/impoundments.	If you install a sediment basin, you must comply with the following: 1. Place velocity dissipation devices at discharge locations and along the length of any outfall channl. 2. Provide storage for either the calculated volume of runoff from a two-year, 24-hour storm, or 3,600 cubic feet per acre drained, whichever is greater. 3. When discharging from the sediment basin, utilize outlet structures that withdraw water from the surface, unless infeasible. 4. Prevent erosion of the sediment basin and the inlet/outlet structures. 5. Situate the sediment basin outside of surface waters and any natural buffers. 6. Remove accumulated sediment to maintain at least 1/2 the design capacity and conduct all other appropriate maintenance to ensure the sediment basin remains in effective operating condition.

	A sediment basin is required if 10 or more disturbed acres drain to one common point.	A sediment basin is required if five or more disturbed acres drain to one common point.
Dewatering practices.	You are prohibited from discharging groundwater, spring water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation associated with a construction activity, unless such waters are first effectively managed by appropriate controls. You must also meet the following requirements for dewatering activities: 1. Do not discharge visible floating solids or foam. 2. Use an oil-water separator or suitable filtration device that is designed to remove oil, grease, or other products if dewatering wastewater is found to contain these materials. 3. Utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. 4. At all points where dewatering water is discharged implement velocity dissipation 5. With backwash water, either haul away for disposal or return it to the beginning of the treatment process. 6. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.	
Part 4.3 Stabilization		
Stabilization deadlines.	Initiate the installation of vegetative or equivalent non-vegetative stabilization measures immediately in any disturbed areas where construction activities have permanently ceased on any portion of the site or will be temporarily inactive for 14 or more calendar days.	
	Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization measures has been initiated.	Complete the installation of stabilization measures as soon as practicable, but no later than seven calendar days after stabilization measures has been initiated.
Stabilization criteria.	1. Vegetative stabilization measures must provide uniform cover that provides 70% or more of the cover that is provided by vegetation native to local undisturbed areas. Vegetative stabilization is considered final when vegetation has been established and rooted or anchored in place. 2. Equivalent non-vegetative stabilization must provide effective cover for exposed areas of the site. 3. For residential construction, final stabilization occurs when: (a) the homebuilder has completed final stabilization, or (b) the homebuilder has provided temporary stabilization for an individual lot prior to occupation of the home by the homeowner and informed the homeowner of the need for, and benefits of, final stabilization. 4. Final stabilization in construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land) may be accomplished by returning the disturbed land to its pre-construction agricultural use.	
Part 4.4 Pollution Prevention Requirements		
Spill prevention and response.	Implement preventive measures such as barriers between material storage and traffic areas. Implement procedures for expeditiously stopping, containing, and cleaning up leaks, spills and other releases. Use drip pans and absorbents under or around leaky vehicles. Ensure adequate supplies are available at all times to handle spills, leaks and disposal of any chemicals or materials. Clean up spills immediately using dry clean-up methods and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.	
Emergency Spill Notification	Discharge of a toxic or hazardous substance or oil from a spill or other release is prohibited. Where a leak, spill, or other release containing a toxic or hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 C.F.R. Parts 110, 117, or 302 occurs during a 24-hour period, you must notify the NRC at (800) 424-8802 or, in the areas of Oklahoma, call the DEQ's Hotline at (800)522-0206 as soon as you have knowledge of the discharge. You must also, within seven	

	calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies
Minimize exposure.	Store chemicals in water-tight containers. Provide cover to prevent chemical containers and materials from coming into contact with precipitation and stormwater or provide secondary containment or a similarly effective means to prevent the discharge of pollutants.
Good housekeeping.	During each workday, clean up and dispose of waste in designated waste containers. Provide waste containers of sufficient size and number to contain construction and domestic wastes. Waste containers must be covered at the end of daily work shifts and when workers are not present. Clean up immediately if containers overflow.
Chemical applications.	Comply with all application and disposal requirements on the pesticide, herbicide, insecticide, fertilizer, or other chemical manufacturer's label.
Equipment and vehicle washing.	Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters prior to discharges. Ensure there is no discharge of soaps, detergents, or solvents in equipment and vehicle wash water.
Fertilizers containing nitrogen or phosphorus.	Minimize discharges of fertilizers containing nitrogen or phosphorus by complying with the following requirements: 1. Apply at a rate and in amounts consistent with manufacturer's specifications. 2. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth. 3. Avoid applying before heavy rains that could cause excess nutrients to be discharged. 4. Never apply to frozen ground. 5. Never apply to stormwater conveyance channels with standing or flowing water. 6. Follow all other federal, state, tribal and local requirements regarding fertilizer application.
Hazardous or toxic waste.	Separate hazardous or toxic waste from construction and domestic waste and store in sealed containers constructed of suitable materials to prevent leakage and corrosion and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, or local requirements. Provide secondary containment for containers that will be stored outside or provide a similarly effective means to prevent discharge of pollutants from these areas. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended methods of disposal and in compliance with federal, state, and local requirements.
PFAS Management	1. Implement measures to minimize discharges of PFAS during emergency firefighting activities and post-emergency activities, including clean-up. 2. Establish specific protocols for minimizing the resuspension, conveyance, and discharge of PFAS, both during normal operations and during all maintenance and remediation activities. 3. Document all activities undertaken in fulfillment of 1 and 2 above in the SWP3.
Sanitary waste.	Position portable toilets so that they are secure and will not be tipped or knocked over and are located away from water of the state and stormwater inlets or conveyances including streets and roadways.
Washing of applicators and containers.	This applies to stucco, paint, concrete, form release oils, curing compounds, and other chemicals. 1. Direct all wash water into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.

	2. Do not dump liquid wastes in storm sewers. Dispose of liquid wastes consistent with your handling of leaks or spills and, for hazardous or toxic waste or oil, in accordance with manufacturer's recommended methods of disposal and in compliance with federal, state, and local requirements.. 3. Remove and dispose of hardened concrete waste consistent with your handling of other construction wasters. 4. Clean up immediately if there is an overflow or if a discharge occurs outside of the leak-proof container or pit. 5. Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas.

Attachment D

NOI

DEQ Form 606-002A Sept. 27, 2022

Oklahoma Department of Environmental Quality Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under the OPDES Construction General Permit OKR10

Submission of this NOI constitutes notice that the party identified in Section I of this form intends to be authorized by DEQ for stormwater discharges associated with construction activity on land disturbance equal to or greater than one acre, or less than one acre of total land area that is part of a larger common plan of development or sale in the State of Oklahoma. Becoming a permittee obligates such discharger to comply with the terms and conditions of this permit. To obtain an authorization from DEQ, this form must be complete with all the pertinent information.

All associated fees must be submitted with this NOI. See instructions for completing the NOI on pages 4 and 5 of this form.

☑ NEW APPLICATION ☐ AMENDMENT/MODIFICATION ☐ RENEWAL Existing Authorization Number: OKR10_____

I. Operator Information *For type of entity, select federal, state, private or municipal.*

Operator Name: City of Sapulpa Phone: 918.248.5934

Mailing Address: 125 Dewey Avenue Type of entity: Municipal

City: Sapulpa State: OK Zip Code: 74066

Operator has operational control over: ☑ - Plans and specifications and/or ☐ - Day-to-day construction activities

Operator's Point of Contact (Name): Michael Russell Title: Owner's Representative

Phone: 918.248.5934 E-mail: mrussell@sapulpa.gov

II. Site/Project Information *Provide latitude/longitude of the center of the site or start/end of the linear project.*

Site/Project Name: Booker T. Washington Recreation Center

Site/Project Address: 209 N Gray Street SIC: _____

City: Sapulpa County: Creek Zip Code: 74066

Site/Project's Point of Contact: TBD Title: Construction Manager

Phone: _____ E-mail: _____

Site/Project's Consultant: Scott Rodehaver Title: Engineer of Record

Phone: 918.584.5858 E-mail: scott.rodehaver@wallace.design

Description of activity: Expansion of an existing recreation center.

Latitude: 36d 00' 09" N Longitude: 96d 07' 21" W

Estimated construction start date: 11/17/2025 Estimated construction end date: 11/30/2026

Total area of the construction site: 4.3 acres Estimated area to be disturbed: 3.08 acres

Current total impervious area: 0.94 acres Post-construction total impervious area: 1.61 acres

Post-construction runoff coefficient of the site: 0.56 Soil and fill material description: Engineered Fill

Is this site/project part of the common plan of development or sale?

☑ - No ☐ - Yes, please provide current authorization number (if applicable): OKR10 _____

III. Notification of Multiple Operators

Are there other operators associated with this site/project?

☐ - No ☑ - Yes: ☑ - All operators will be covered under this authorization.

☐ - All, or some, operators will be obtaining a separate authorization and will be documented in the SWP3.

☐ - New owner/operators will be obtaining a separate authorization and will be documented using Form 605-NCO Notification of Change of Ownership (NCO) which will be kept with the SWP3.

IV. Site/Project Discharge Information *Use additional sheets of paper if necessary.*

Does the site/project discharge stormwater into an MS4? ☐ No ☑ Yes City of Sapulpa Name of the MS4

Name of all Receiving Waterbodies	Is the waterbody impaired? If so, what are its impairments?	Is there a TMDL for that impairment?
Euchee Creek	☐ Yes ☑ No	☐ Yes ☑ No
Rock Creek	☑ Yes ☐ No Benthic Macro.	☐ Yes ☑ No

Endangered Species Eligibility

a. ☑ My site/project is not located within any of the corridors of federal and state identified Aquatic Resources of Concern (ARC).
b. ☐ My site/project is located within a corridor of federal and state identified ARC.
c. ☐ If one of the eligibility criteria cannot be met, I may use Addendum D for equivalent sediment controls.
d. ☐ I am required to have an Endangered Species Act Section 7 consultation process.
e. ☐ I am relying on another permittee's certification of eligibility and agree to comply with the conditions of that certification.

V. Stormwater Pollution Prevention Plan (SWP3) Information

Has the SWP3 been prepared and is it available on-site for review? ☑ Yes (SWP3 must be developed prior to NOI submittal)
Is the operator registered and in good standing with the Secretary of State of Oklahoma? ☑ Yes ☐ No
Does your site/project have construction support activities? ☐ Yes (asphalt batch plant) ☐ Yes (concrete batch plant)
☐ Other (e.g., equipment storage yards, material storage areas, excavated material disposal areas, borrow areas, etc.) ☑ No

Proposed Best Management Practices (BMPs) to control pollution in the stormwater discharges, check all that apply:

☐ Construction phased	☐ Sediment basin/trap	☑ Mulching/seeding/sodding	☐ Vegetated buffer
☑ Vehicle/concrete wash-out	☐ Site inspection	☐ Diversion dikes	☑ Inlet protection
☑ Construction entrances	☑ Silt fence	☑ Waste management	☐ Stream crossings
☐ Spill prevention/cleanup	☑ Employee training	☐ Compost blanket/geotextiles	☐ Check dams
☐ Construction sequencing	☐ Riprap	☐ Gradient terraces	☐ Silt dikes

Other BMPs: Dust Suppression, Good Housekeeping, Preventive Maintenance, Preservation of Top Soil

Post-construction Best Management Practices for construction activities, check all that apply:

☐ Narrow street/turnaround	☐ Wet/dry pond	☐ Protected natural features	☐ Vegetated filter strips
☐ Eliminated curbs & gutters	☐ Wetland	☐ Infiltration basin/trench	☐ Porous pavement
☐ Bio-retention/rain gardens	☐ Riparian	☐ Redevelopment/retrofit	☐ Grassed swales
☐ Low impact development	☐ Green designs	☐ Conservation easements	☐ Retrofit

Other BMPs: _____

VI. Required Attachments

☑ A legible site map showing your facility location and boundaries, including support activities, and all waters of the state within one mile of the site.
☑ Application fee ($100.00) and first-year permit fee ($347.71) or ☐ Fees have already been paid

VII. Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print Name: TBD Title: Construction Manager

E-mail: _____ Phone: _____

Signature: _____ Date: _____

For DEQ use only: Assigned Authorization Number: OKR10_____

Instructions for Completing NOI Form 606-002A for Stormwater Discharges Associated with Construction Activities on Sites of One or more acres under the OPDES Construction General Permit OKR10

Who Must File an NOI Form

Under Section 402(p) of the Clean Water Act and regulation at 40 C.F.R. § 122.26, adopted and incorporated by reference in Oklahoma Administrative Code (OAC) 252:606-1-3(b)(3)(L), stormwater discharges associated with construction activities are prohibited to waters of the state unless authorized under an Oklahoma Pollutant Discharge Elimination System (OPDES) permit from the Oklahoma Department of Environmental Quality (DEQ). Operators of construction sites where one or more acres are disturbed and smaller sites that are part of a larger common plan of development or sale where there is a cumulative disturbance of at least one acre must obtain coverage under the OPDES Construction General Permit (CGP) OKR10 by submitting a completed NOI to DEQ. If you have questions regarding permit coverage under the Stormwater Program, you may call the Stormwater Unit of Environmental Complaints and Local Services (ECLS) of DEQ at (405) 702-6100 or email to ecls-stormwaterpermitting@deq.ok.gov.

Completing the NOI Form

To complete an NOI form, type or print in all the appropriate places of the form. Check the appropriate box whether you are filing for a new application, amendment/modification, or renewal of your current permit authorization. Enter your current authorization number if you are applying for permit amendment/modification or renewal.

Section I. Operator Information

Provide the legal name, mailing address and telephone number of the company/firm, public organization, or any other entity that either individually or together meets the following two criteria: (1) have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g., in most cases this is the owner of the site); and/or (2) have the day-to-day operational control of those activities at the site necessary to ensure compliance with Stormwater Pollution Prevention Plan (SWP3) and/or other permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this the general contractor of the project). Also enter the name, title, phone number, and email address for the operator's point of contact.

Section II. Site/Project Information

Provide the site/project's official or legal name, phone number and street address or general location information (e.g., Intersection of State Highways 61 and 34). Also provide the name, title, phone number, and email address for the site/project's point of contact.

Indicate the purpose of the project (e.g., residential subdivision, commercial building, road and/or bridge, wind farm, etc.).

Provide latitude and longitude of the construction project or site (at the center of the site). Latitude and Longitude can be obtained online at DEQ and USGS's websites or other mapping tools.

Provide the estimated starting and ending dates of the construction on site or project. The date must be provided in MM-DD-YYYY where MM is the month, DD is the date and YYYY is the year. Provide total area of construction site, and estimated area to be disturbed in acres. Provide total impervious area before construction starts (pre-construction) and total impervious area after construction completed (post-construction) in acres.

Provide post-construction runoff coefficient of the site after the construction addressed in the NOI is completed. Operator may use recommended runoff coefficients in Addendum E of the OKR10 permit. Average coefficients for composite areas may be calculated on an area weighted basis from $C=\sum C_i A_i / \sum A_i$, where C_i is the coefficient applicable to the area A_i.

Describe the nature of fill material and existing soil data describing soils (e.g., coarse-grained soils: gravels, sands, or fine-grained soils: silts and clays, and highly organic soils, etc.). Operators may use soil classification chart in Attachment 1 of Addendum D to determine the types of the soils on the site. Indicate whether this is the site of the common plan of development or sale. Enter the current OKR10 authorization number if it is part of a common plan of development or sale.

Complete the section on Endangered Species Eligibility by checking the appropriate box: (a) the site/project is not located within any of the corridors of the federal or state identified Aquatic Resources of Concern (ARC) and further investigation is not required; or (b) the site/project is located within a corridor of a federal or state identified ARC. Operators must provide and implement measures to protect the endangered or threatened species or their critical habitat; or (c) If one of those eligibility criteria under Part 2.5.B.3.b, d, or e cannot be met, operator may use Addendum D to evaluate alternatives of buffer requirements and select equivalent sediment controls or contact DEQ for further consultation; or (d) operator's federally approved construction activities are authorized by the appropriate federal or state agency and that authorization addresses the Endangered Species Act Section 7 consultation for the operator's stormwater discharge or stormwater-related activities. Operator selecting option d must include documentation from the United States Fish and Wildlife Service (USFWS) or a qualified biologist that demonstrates Section 7 consultation has been completed. The SWP3 must include any conditions resulting from that consultation; or (e) operator's stormwater discharges and stormwater-related activities were already addressed in another operator's certification of eligibility that included the proposed site/project area. Operator agrees to comply with any conditions attached to that certification.

Section III. Notification of Multiple Operators

Indicate whether all operators on the site will be covered under this authorization or have obtained/will obtain their own authorizations. If operators will be obtaining their own authorizations, indicate whether they will be documented in the SWP3 or, for new owner/operators, in Form 605-NCO which shall be kept with the SWP3.

Section IV. Site/Project Discharge Information

Indicate whether the site/project discharges stormwater to a Municipal Separate Storm Sewer System (MS4). If yes, enter the name of the MS4. A MS4 is defined as a conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains that are owned or operated by a state, city, town, borough, parish, district, association, or other public body which is designed or used for collecting or conveying stormwater.

Identify all the receiving waterbodies from the sites that discharge stormwater, including names of those waterbodies. Check appropriate box if the receiving waterbody is listed in DEQ 303(d) impaired waterbodies or drains to watershed with approved Total Maximum Daily Loads (TMDL) report. Identify the pollutant(s) for which the waterbody is impaired.

For a current list of MS4s in the State of Oklahoma, review the 2021 OKR04 Fact Sheet located at https://www.deq.ok.gov/stormwater-permitting/okr04-municipal-stormwater.

Instructions for Completing NOI Form 606-002A for Stormwater Discharges Associated with Construction Activity of One or More Acres under the OPDES Construction General Permit OKR10

Section V. Stormwater Pollution Prevention Plan (SWP3) Information

All sites/projects eligible for coverage under the CGP OKR10 permit must prepare a SWP3 prior to submitting the NOI to DEQ. The SWP3 is intended to document the selection, design, and installation of different control measures to meet the permit's non-numeric technology based effluent limitations, if applicable, numeric effluent limitations, and water quality-based effluent limitations contained in Part 3 of the Permit as well as to document compliance with other permit requirements. The SWP3 must be prepared by a qualified person in accordance with good engineering practices and to industry standards. The SWP3 is considered a "living document" and must be maintained/updated regularly to accurately reflect current site conditions. Check the appropriate box if the SWP3 has been prepared and is available on site. Check the appropriate box if the operator has registered for construction activities with the Secretary of State of Oklahoma.

List all the proposed Best Management Practices (BMPs) for construction activities. Operator must describe the proposed measures, including BMPs to control pollutants in stormwater discharges during construction. Specify any BMPs to be used if additional erosion and sediment controls are required by local government or due to specific site conditions.

List all the post-construction proposed Best Management Practices (BMPs) for construction activities. Operator must describe the proposed measures to be used to control pollutants in stormwater discharges that will occur after construction operations have been completed, including any BMPs to be used if additional erosion and sediment controls are required by local government or due to specific site conditions.

Section VI. Required Attachments

Submit the following with the NOI:

- A legible site map showing your facility location and boundaries, including support activities, and all waters of the state within one mile of the site, and
- The application fee and permit fee or indicate if fees have already been paid
  - Renewal NOI - $100 application fee,
  - New NOI - $447.71 ($100 application fee and $347.71 annual permit fee).

Section VII. Certification

Federal regulations require all permit applications and report shall be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental law and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents had been assigned or delegated to the manager in accordance with corporate procedures;

For a limited liability company (LLC): by a member, managing or otherwise;

For a partnership: by a general partner;

For a sole proprietorship: by the proprietor (owner); or

For a municipality, state, federal, or other public facility: by either a principal executive or ranking elected official.

Modifying an Existing NOI

After issuance of an authorization, an NOI modification may be submitted by a permittee if circumstances change (e.g., the area to be disturbed has increased from 20 acres to 40 acres). However, the modification of an NOI cannot be used if the area to be disturbed has decreased (e.g., the area to be disturbed has been changed from 40 acres to 20 acres). The amended NOI shall include the operator's assigned authorization number and request a change.

The original authorization number will be retained. DEQ will provide an acknowledgement by either mail or email that the amended NOI has been received and processed. Permittees must update their SWP3 to reflect the modification.

Submitting Your NOI Form and Required Attachments

The completed NOI form and all required attachments must be submitted to the following address, fax, or email:

Stormwater Unit of ECLS
Oklahoma DEQ
P.O. Box 1677, Oklahoma City, OK 73101-1677

Fax to (405)702-6226

Email to ecls-stormwaterpermitting@deq.ok.gov

Once DEQ's online NOI submission tool is made available, NOIs may also be completed and submitted electronically using that tool.

Attachment E

Inspection Report

Site Inspection Report

Inspection Date: _____

General Information (OKR10 Part 4.3.13.E)	
Name of Project:	**DEQ Permit No.:**
Inspector Name:	**Inspector Title:**
Inspector's Contact Information:	
Inspection Frequency: **Standard Frequency**: ☐ Every 7 days and within 24 hours of a 0.50" rain, or discharge from snowmelt ☐ Every 14 days and within 24 hours of a 0.50" rain, or discharge from snowmelt **Reduced Frequency**: ☐ Once per month (for stabilized areas)	
Weather at the time of this inspection: _____ **Was this inspection after a 0.50" storm event?** ☐ Yes ☐ No, **Total rainfall that triggered the inspection** (in inches)**:**	
Are there any discharges at the time of inspection? ☐ Yes ☐ No	

List all areas where soil stabilization is required to begin because construction work in that area has permanently or temporarily stopped and all areas where stabilization has been implemented:

Stabilization of Exposed Soil (OKR10 Part 4.3.13.D)			
Stabilization Area	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes** (describe your observation)
		☐ Yes ☐ No If yes, provide date:	
		☐ Yes ☐ No If yes, provide date:	
		☐ Yes ☐ No If yes, provide date:	
		☐ Yes ☐ No If yes, provide date:	
		☐ Yes ☐ No If yes, provide date:	

(Notes: *For each area where stabilization has been initiated, describe the progress that has been made, and what additional actions are necessary to complete stabilization. Note the effectiveness of stabilization in preventing erosion. If stabilization has been initiated but not completed, make a note of the date it is to be completed. If stabilization has been completed, make a note of the date it was completed. If stabilization has not yet been initiated, make a note of the date it is to be initiated, and the date it is to be completed.)*

Provide a list/description of all structural and non-structural BMPs that your SWP3 indicates will be installed and implemented at your site. You must separately identify the **location** of each control. During Inspection, identify whether they are **installed and operating properly**, or any **corrective action** is necessary. Provide the **date** on which the condition that triggered the need for maintenance or corrective action was first identified. In the notes section you must describe the **specifics about the problem** you observed.

For large projects, the installation of erosion control measures may be phased along with the construction. Controls should be installed prior to disturbance of areas draining to the control.

Condition and Effectiveness of BMP Controls & Pollution Prevention (OKR10 Part 3.3, 4 & 5)					
No.	**BMP Description & Location**	**Is BMP Installed & Operating Properly?**	**Corrective Action (CA) Required?**	**Date on Which Maintenance or CA First Identified?**	**Notes** (describe if you observed any problem)
1.	Silt Fence/Fiber Rolls/Berm/Wattles Location:	☐ Yes ☐ No	☐ Yes ☐ No		
2.	Silt Dikes/Check Dams/Rock Dams Location:	☐ Yes ☐ No	☐ Yes ☐ No		
3.	Stabilized Construction Entrance/Exit Location:	☐ Yes ☐ No	☐ Yes ☐ No		
4.	Inlet Protection on all storm drain Location:	☐ Yes ☐ No	☐ Yes ☐ No		
5.	Sand Bag Barrier/Gravel Bag Barrier Location:	☐ Yes ☐ No	☐ Yes ☐ No		
6.	Vegetated Swales Location:	☐ Yes ☐ No	☐ Yes ☐ No		
7.	Compost Blankets/Geotextiles/Mats Location:	☐ Yes ☐ No	☐ Yes ☐ No		
8.	Vegetative Buffers Location:	☐ Yes ☐ No	☐ Yes ☐ No		
9.	Sediment Trap/ Sediment Basin Location:	☐ Yes ☐ No	☐ Yes ☐ No		
10.	Concrete Washout Pit Location:	☐ Yes ☐ No	☐ Yes ☐ No		
11.	Dust Control/Prevention	☐ Yes ☐ No	☐ Yes ☐ No		
12.		☐ Yes ☐ No	☐ Yes ☐ No		
13.		☐ Yes ☐ No	☐ Yes ☐ No		
14.		☐ Yes ☐ No	☐ Yes ☐ No		
15.		☐ Yes ☐ No	☐ Yes ☐ No		
16.		☐ Yes ☐ No	☐ Yes ☐ No		

(**Note:** *The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions – whether a required stormwater control was never installed, or was installed incorrectly, or not installed in accordance with the requirements of OKR10*)

Pollution Prevention and Waste Management (OKR10 Part 3.3.3)		
Items of Inspection	**Response & Reason**	**Action(s) Needed**
Is the site free of floatables, litter, and construction debris?	☐ Yes ☐ No If no, reason:	
Are material storage and handling areas, including fueling areas, free of spills and leaks?	☐ Yes ☐ No If no, reason:	
Are spill kits available where spills and leaks are likely to occur?	☐ Yes ☐ No If no, reason:	
Are dumpsters and waste receptacles covered when not in use?	☐ Yes ☐ No If no, reason:	
Has preventative maintenance been conducted on equipment and machinery?	☐ Yes ☐ No If no, reason:	
Are material stockpiles sufficiently contained?	☐ Yes ☐ No If no, reason:	
Has there been any sediment tracked-out from the site onto the surface of paved street, sidewalks or other paved areas outside of the site?	☐ Yes ☐ No If no, reason:	
Is the project free from visible erosion and/or sedimentation?	☐ Yes ☐ No If no, reason:	

Complete the following section if a discharge is occurring at the time of inspection:

Description of Discharges (OKR10 Part 4.3.13.D.2.f)	
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐ Yes ☐ No, **If yes, provide the following information for each point of discharge:**	
Specify Discharge Location	**Observations (Visual Quality of the Discharge)**
1.	Describe the discharge (color, odor, floating, settled/suspended solids, foam, & oil sheen): Are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No, If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge (color, odor, floating, settled/suspended solids, foam, & oil sheen): Are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No, If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

Contractor or Subcontractor Certification and Signature:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:_____ **Date:** _____

Print Name: _____ **Affiliation:** _____

Attachment F

Corrective Action Report

Corrective Action Report

Today's Date: _____

(You are only required to fill out this form if any of the corrective action triggering conditions occurs on your site. Routine maintenance and repairs are generally not considered to be a corrective action triggering condition.)

Section A: Initial Report (Part 4.3.14.B.1 of OKR10)

(Complete this section within **24 hours** of discovering the condition that triggered corrective action)

Name of Project: **DEQ's Permit No.** OKR10

Date Problem First Discovered: **Time Problem First Discovered:**

Name & Contact Information of the Individual:

What site conditions triggered the requirement to conduct corrective action *(check the box that applies)*:

- ☐ A required stormwater control was never installed or was installed incorrectly, or not in accordance with the corresponding OKR10 permit requirement
- ☐ A stormwater control is not effective enough for the discharge to meet applicable water quality standards
- ☐ A prohibited discharge (OKR10 Parts 3.1 and 3.3.3.A) is occurring or has occurred.
- ☐ DEQ requires corrective action as a result of permit violations found during an DEQ inspection

Provide a description of the problem:

Deadline for completing corrective action:	***not more than 7 calendar days after the date you discovered the problem***

Section B: Corrective Action Progress (Part 4.3.14.B.2 of OKR10)

(Complete this section no later than **7 calendar days** after discovering the condition that triggered corrective action)

Section B.1: Why the Problem Occurred

Cause(s) of Problem	How It Was Determined & Date of Determining the Cause
1.	1.
2.	2.

Section B.2: Stormwater Control Modifications to be Implemented to Correct the Problem

Stormwater Control Modification(s) Needed to Correct Problem	Date of Completion	SWP3 Update Necessary?	SWP3 Modifications Notes
1.		☐Yes ☐ No, If yes, provide date SWP3 modified:	
2.		☐ Yes ☐ No, If yes, provide date SWP3 modified:	

Section C: Certification and Signature by Permittee

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

Attachment G

Employee Training Report

SWP3 Employee Training Report

Project Name: _____ DEQ Authorization No. OKR10_____

Instructor's Name:_____ Instructor's Title: _____

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ☐ Overview of SWP3
- ☐ Erosion & Sediment Controls Installation
- ☐ Erosion & Sediment Controls Maintenance
- ☐ Spill Prevention & Response
- ☐ Temporary & Permanent Stabilization
- ☐ Good Housekeeping
- ☐ Inspections and Corrective Actions
- ☐ Emergency Procedures

Specific Training Objective:_____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Signature of the Attendees	Date
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Attachment H

Modification Log

SWP3 Modification Log

No.	Description of the Modification	Date of Modification	Modification Prepared by [Name(s) and Title]	Signature by Designated Corporate Official
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Attachment I

Site Stabilization Log

Grading and Stabilization Activities Log

Date Grading Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Temporary or Permanent)	Date When Stabilization Initiated

Attachment J

Quarterly Visual Monitoring Report

Attachment K

Annual Site Evaluation Report

Attachment L

Discharge Monitoring Report

Attachment M

Additional Documentation

Subcontractor Certifications/Agreement

_____
(Name of Operator)

_____
(Project Name)

Contractors, builders, regular suppliers or others (contractors) involved in construction activity who are not the operator, developer, or general contractor, and have not been issued the Storm Water Construction General Permit (Permit) authorization, execute this Contractor Certification which places the responsibility of complying with an abiding by the intent and purpose of the permit with the contractor for any and all work performed under the authority and direction of the contractor. Furthermore, the contractor assumes responsibility to avoid or eliminate any actual or potential adverse effects upon the environment according to the Storm Water Pollution Prevention Plan (SWP3), during all phases of building, construction, or delivery activity on any and all construction sites under the control and responsibility of the contractor as described in the SWP3.

1. Contractor company name: _____
2. Contractor address: _____
3. Project locations: _____

_____
(For addition addresses attach list to this form)

4. Contractor must be thoroughly familiar with the original Notice of Intent (NOI) filed by _____ with the Oklahoma Department of Environmental Quality.

Contractor must also be thoroughly familiar with, and adhere to, the SWP3 and the Best Management Practices (BMP) on file at the following location:

_____

The Contractor is certifying below that they assume all physical responsibility for any and all construction activities performed by the Contractor or under the direction and control of the Contractor, to avoid or eliminate any actual or potential adverse effects upon the environment pertaining to the properties listed in Item 3 above.

Certification

I certify that I understand the terms and conditions of the Oklahoma Pollutant Discharge Elimination System Act (OPDES) General Permit that authorizes storm water discharges associated with construction activity from the construction site identified as part of this certification. I have read and understand the Operators Notice of Intent and Part 1.2 for overage under the General Permit for stormwater discharges from construction activities, including those requirements published in the modified OPDES General Permit OKR10 of 2022 and the SWP3 and BMP described pertaining to the project locations in Item 3 above. I agree that as a contractor, builder, regular supplier, or a support service company, I am responsible for installing and/or maintaining the appropriate pollution prevention measures that I am responsible for according to the agreement I have with the permittee.

I understand that continued coverage under this permit is contingent upon maintaining eligibility as provided for in Part 1.2 of the permit.

Signature: _____ Title: _____

Print Name: _____ Date: _____

DOCUMENT 00 3232
ASBESTOS DATA

1.1 ASBESTOS DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. Asbestos Survey Report investigation report for Project titled: Booker T. Washing Recreation Center NESHAPS REPORT- OKDOL #402115 Dated 08.11.2024 is an attachment to the project manual.

END OF DOCUMENT 00 3132

American Demolition

Asbestos Survey Report

Booker T. Washington Recreation Center

NESHAPS Report

Facility:

Booker T. Washington Recreation Center

209 North Gray Street

Sapulpa, OK. 74066

Survey Performed For:

Mr. Michael Russell

Project Manager City Of Sapulpa

425 East Dewey Ave.

Sapulpa, OK. 74066

Survey Performed By:

Brian Sorrels, OKDOL #402115

American Demolition & Site Services LLC. 5263 S. 65th W. Ave. Tulsa, OK. 74107
918-241-1100 americandemoestimates@gmail.com 918-447-2608 (fax)

Booker T. Washington Recreation Center

NESHAPS Asbestos Survey Report

American Demolition File Number 24-188

Survey Date: 08/02/2024

Report Date: 08/11/2024

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   - **2.1 Authorization..... 6**
   - **2.2 Site Description..... 6**
   - **2.3 Project Background..... 6**
   - **2.4 Purpose And Scope..... 6-7**

3.0 Assessment Activities..... 7

- **3.1 Record Document Review..... 7**
- **3.2 Visual Inspection/Sampling Of Homogenous Areas 7-8**
- **3.3 Sample Analysis..... 8-9**

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4.1 Conclusion..... 9

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Appendices

Appendix A – Laboratory Report/ Chain Of Custody

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1.0 Executive Summary

American Demolition performed an asbestos survey at Booker T. Washington Recreation Center, 209 North Gray Street Sapulpa, OK. 74066. The purpose or the survey was to ascertain whether any building materials were Asbestos Containing Material (ACM) in advance of the structure being slated for demolition by the owner in the future.

American Demolition identified seventeen homogeneous areas. Building materials such as Vinyl floor tiles multiple layers, floor base, adhesive and ceiling tiles were identified. There were no sheet rock, joint compound, caulk, or thermal insulation present to sample.

The survey was conducted by EPA- accredited and Oklahoma Department of Labor licensed asbestos inspector.

The subject property for the purposes of this report will be referred to as Booker T. Washington Recreation Center. Drawings were generated.

The Survey was conducted for Mr. Michael Russell Project Manager For the City Of Sapulpa.

The scope of the Asbestos Survey was to identify, quantify, and assess the condition of suspect asbestos containing materials both regulated and non-regulated asbestos materials, as well as obtaining representative samples for asbestos analysis.

2.0 Introduction

An asbestos survey of the Booker T. Washington Recreation Center has been conducted by American Demolition by OKDOL licensed Inspector Mr. Brian Sorrels. The survey was conducted on August 2nd, 2024.

The survey consists of the following phases:

Phase 1 – The building was inspected of all surfaces (i.e. floors, walls, ceilings, etc.) and thermal insulation. Samples were taken from floors, Floor Base, and ceiling structures, etc. in sufficient numbers according to their appearance, material type, and grouped by homogenous areas. The survey began by inspecting, identifying flooring materials which in this building was two layers of vinyl tile. This was followed by an inspection of the walls, ceilings, and floor base. The plumbing piping and flues were not insulated. The exterior of the building was block and brick as well as the interior walls. See table 1 and appendix A for additional information.

Phase 2 – Each sample was placed into a plastic bag, labeled, and numbered. Strict sample integrity was maintained and documented in the Chain of Custody (see Appendix A). The samples were taken to Environmental Hazard Control INC. a NVLAP accredited laboratory for bulk asbestos analysis. The lab utilized method analysis EPA 600/R-93/116. Appendix A contains the copy of the laboratory report and chain of custody related to the sampling performed for the subject property.

2.1 Authorization

Authorization to perform the asbestos survey was given by Mr. Michael Russell via electronic mail for the work.

2.2 Site Description

The subject property consists of one eating area, a kitchen, four bathrooms, three storage rooms, office, conference room, arcade, weight room, rec room, basement, and second floor storge area. The subject property consisted of vinyl tile floor, cinderblock and brick walls, floor base, and drop ceiling tiles.

2.3 Project Background

American Demolition understands the building is the Booker T. Washington Recreation Center and may become slated to be demolished in the future by the City Of Sapulpa.

2.4 Purpose And Scope

The survey was conducted for the general information purposes for the owner's future use.
The scope of the survey was to identify, quantify and asses the condition of suspect asbestos containing material both regulated

and non-regulated asbestos materials, as well as obtaining representative samples for asbestos analysis.

3.0 Assessment Activities

The visual inspection and sampling activities were conducted on August 2nd 2024. No map was provided by The City Of Sapulpa.

3.1 Record Document Review

The City Of Sapulpa did not provide any historical data to American Demolition including maintenance records, historical data, or other documents for information regarding construction history and building materials.

3.2 Visual Inspection/Sampling Of Homogenous Areas

Floors, Floor Base, Ceiling Tile

All floors consisted of two layers of vinyl tiles and adhesive and suspect vinyl floor tiles, and floor base was seen and samples pulled and sent to lab for analysis. The floor tile and base that were sampled revealed no RACM.

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Page 8

Walls/Ceilings

All walls were cinderblock, or brick and drop ceiling building material homogenous areas were inspected. Ceiling tile was seen and samples pulled and sent to lab for analysis. The ceilings that were sampled revealed no RACM.

Thermal

No piping or flues were insulated with suspect materials, other than fiberglass or foam.

Miscellaneous

Seventeen homogenous areas of miscellaneous materials were identified.

1. Flooring and adhesive, floor base and adhesive – Negative.
2. Ceiling tiles. – Negative

3.3 Sample Analysis

The samples were sent in one batch to Environmental Hazard Control Laboratory, a NVLAP accredited laboratory. The lab utilized method analysis EPA 600/R-93/116.
Appendix A contains the copy of the laboratory report and chian of custody related to the sampling performed for the building.
Seventeen

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homogenous areas were identified during the survey. Table 1 below is a summary of the sample results.

According to our survey and laboratory findings, asbestos is not contained in any sample.

4. Asbestos Containing Material

Based upon the methodologies described in this report, American Demolition did not identify any Regulated Asbestos Containing Material (RACM)

4.1 Conclusion

The Oklahoma Department of Environmental Quality (OKDEQ) regulated certain asbestos activities within the state. A ten day NESHPS notification to the OKDEQ is required prior to any renovation or demolition activity. Please include this report with your NESHAPS notification.

If any additional materials are found which have not been tested or if any suspect materials are found in any areas that were not visible at the time of the survey, they should be assumed to be asbestos containing until the laboratory testing proves otherwise.

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Please let me know if you need any additional information or have any questions.

Brian Sorrels
OKDOL #402115
American Demolition

American Demolition

American Demolition & Site Services LLC. 5263 S. 65th W. Ave. Tulsa, OK. 74107
918-241-1100 americandemoestimates@gmail.com 918-447-2608 (fax)

CLOSET & STORAGE
REC ROOM
WEIGHT ROOM
BATHROOMS
BREAKROOM
CLOSET
OFFICES
OFFICES
ARCADE
BATHROOMS
GYM
KITCHEN
CLOSET
STAIR CASE
LOBBY/LOUNGE
ROOM
2nd FLOOR
STORAGE
1ST FLOOR

1 K CT

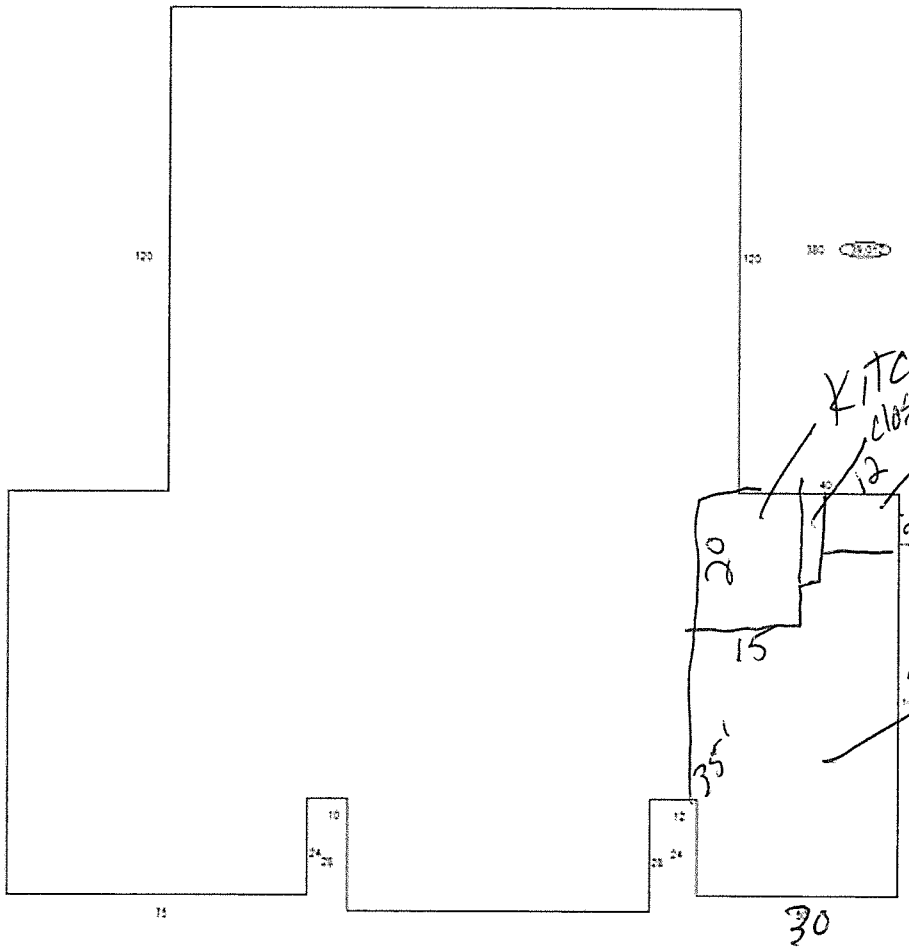
1 K FT

1 C CT

1 C FT

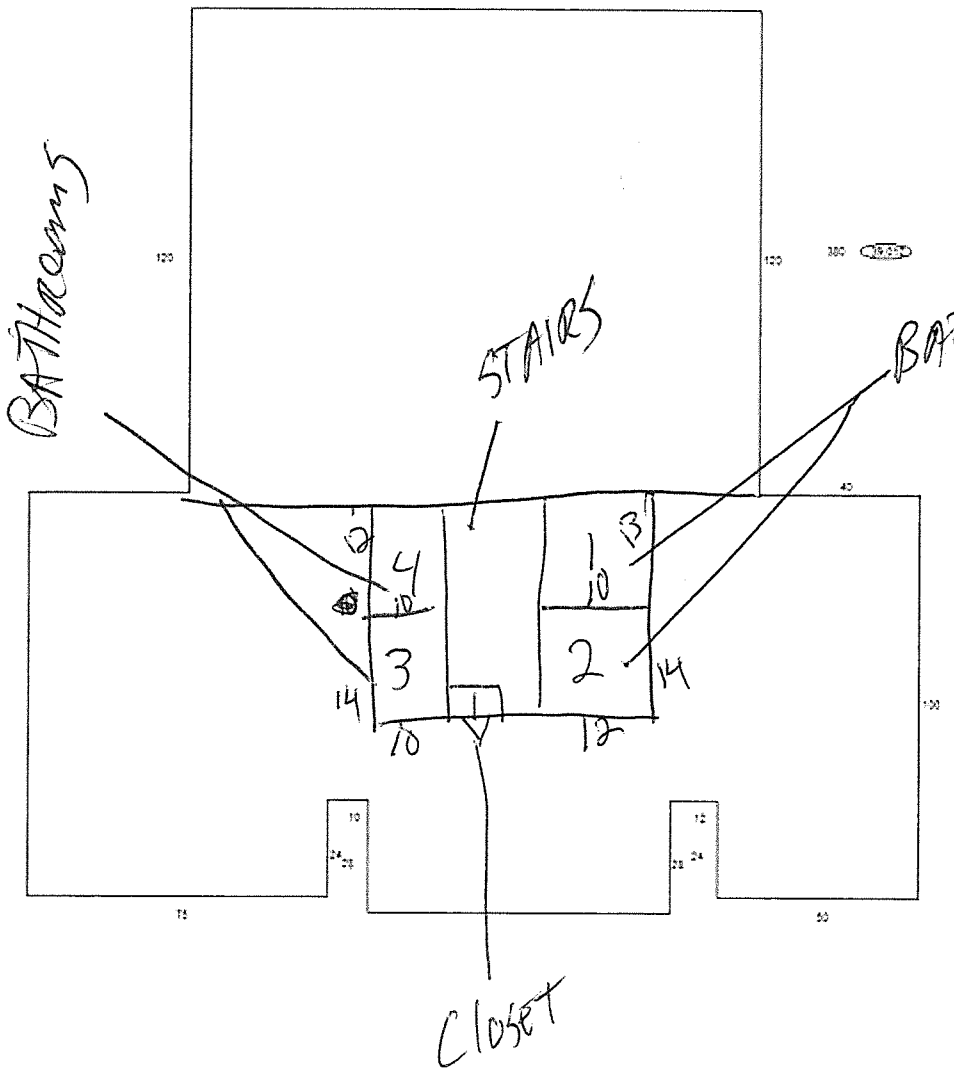
1 CR CT

1 CR FT



2

HALLWAYS
12x40
12x73
14x41



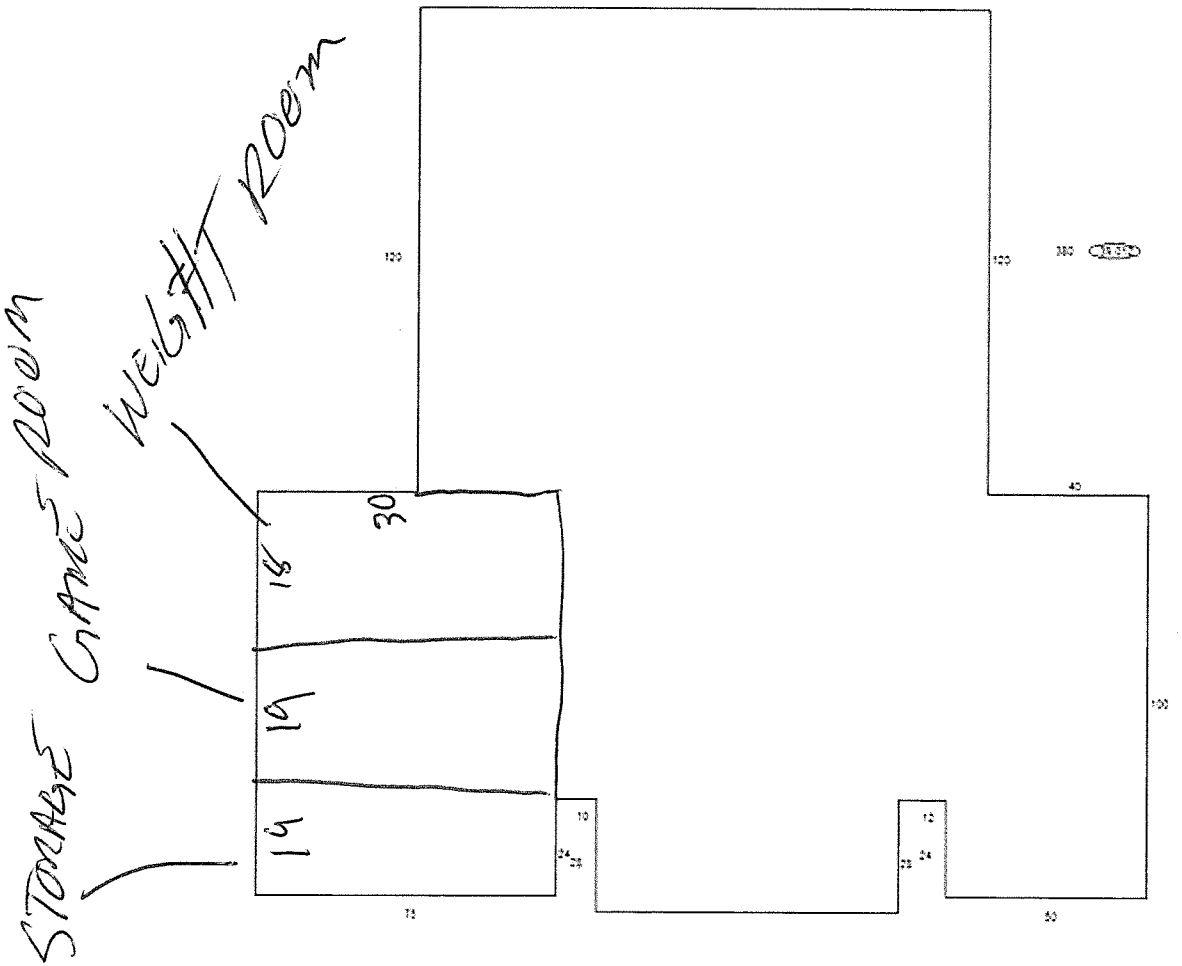
2B1CT
2B1FT
2B1FB
2B2CT
2B2FT
2B2FB
2B3CT
2B3FT
2B3FB
2B4CT
2B4FT
2B4FB

3

3SCT
3SFT

3GCT
3GFT

3WCT
3WFT



4 0 CT

4 0 FT

4

4 5 CT

4 5 FT

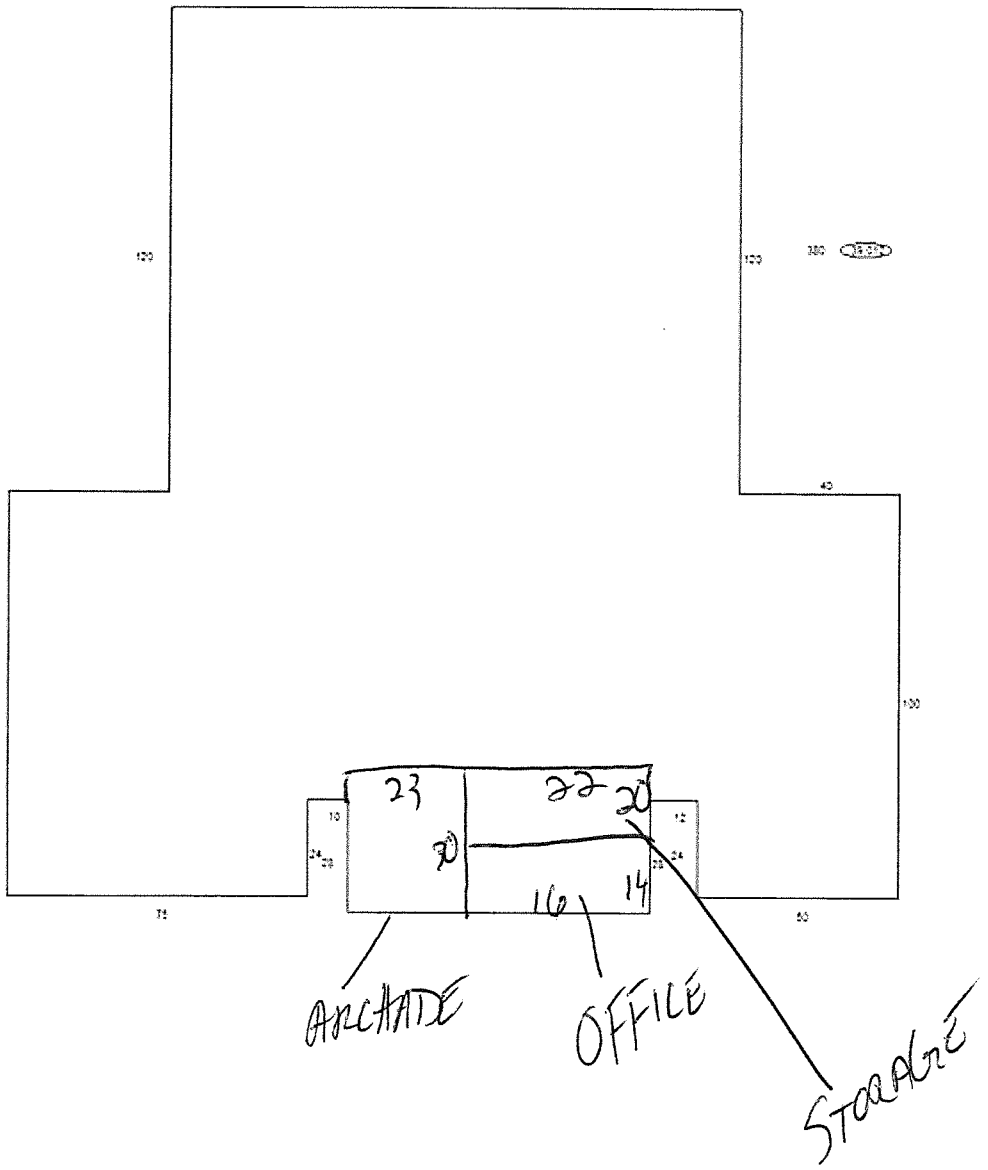
4A CT

4A FT

H CT

H FT

H FB



Environmental Hazard Control, Inc
2301 S. Sheridan Road, Ste B
Tulsa, OK 74129
(918) 747-1330

AIHA Reference Lab #101372
Method EPA 600/R-93/116

CLIENT: AMERICAN DEMOLITION
5263 S. 65TH W AVE
TULSA, OK 74107

PROJECT: BTW REC CENTER
209 N GRAY STREET

EHCI JOB#: _____ **SAMPLES COLLECTED BY:** BRIAN SORRELS, 402115

Laboratory ID Number	Field Sample Number	Sample Location/Description	Asbestos Materials	Non-asbestos Materials	Results
202435628	3GFT1	FLOOR TILE: Purple floor tile		1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435629	Layered	Yellow mastic backing		2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435630	3GFT2	FLOOR TILE: Purple floor tile		1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435631	Layered	Yellow mastic backing		2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435632	3GFT3	FLOOR TILE: Purple floor tile		<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435633	Layered	Yellow mastic backing		2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435634	3GFT4	FLOOR TILE: White floor tile		<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435635	Layered	Yellow mastic backing		1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435636	3GFT5	FLOOR TILE: White floor tile		<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435637	Layered	Yellow mastic backing		1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435638	3GFT6	FLOOR TILE: White floor tile		<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435639	Layered	Yellow mastic backing		1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435640	1CRCT1	CEILING TILE		45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435641	1CRCT2	CEILING TILE		45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED

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202435642	1CRCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435643	1CRFT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435644	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435645	1CRFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435646	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435647	1CRFT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435648	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435649	1CRFT4	FLOOR TILE:white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435650	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435651	1CRFT5	FLOOR TILE:white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435652	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435653	1CRFT6	FLOOR TILE:white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435654	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435655	2B4CT1	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435656	2B4CT2	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435657	2B4CT3	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED

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202435658	2B4FT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435659	2B4FT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435660	2B4FT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435661	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435662	2B4FT4	FLOOR TILE: Light blue floor tile	100% NON-FIBROUS	NONE DETECTED
202435663	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435664	2B4FT5	FLOOR TILE: Light blue floor tile	100% NON-FIBROUS	NONE DETECTED
202435665	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435666	2B4FT6	FLOOR TILE: Light blue floor tile	100% NON-FIBROUS	NONE DETECTED
202435667	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435668	2B4FB1	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435669	2B4FB2	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435670	2B4FB3	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435671	1CCT1	CEILING TILE	35% CELLULOSE 50% FIBROUS GLASS 15% NON-FIBROUS	NONE DETECTED
202435672	1CCT2	CEILING TILE	35% CELLULOSE 50% FIBROUS GLASS 15% NON-FIBROUS	NONE DETECTED
202435673	1CCT3	CEILING TILE	35% CELLULOSE 50% FIBROUS GLASS 15% NON-FIBROUS	NONE DETECTED
202435674	1CFT1	FLOOR TILE: White floor tile	3% CELLULOSE 97% NON-FIBROUS	NONE DETECTED
202435675	Layerec	BLACK MASTIC BACKING	2% CELLULOSE 1% FIBROUS GLASS 97% NON-FIBROUS	NONE DETECTED

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202435676	1CFT2	FLOOR TILE: White floor tile	3% CELLULOSE 97% NON-FIBROUS	NONE DETECTED
202435677	Layerec	BLACK MASTIC BACKING	2% CELLULOSE 1% FIBROUS GLASS 97% NON-FIBROUS	NONE DETECTED
202435678	1CFT3	FLOOR TILE: White floor tile	3% CELLULOSE 97% NON-FIBROUS	NONE DETECTED
202435679	Layerec	BLACK MASTIC BACKING	2% CELLULOSE 1% FIBROUS GLASS 97% NON-FIBROUS	NONE DETECTED
202435680	2B2FT4	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435681	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435682	2B2FT5	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435683	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435684	2B2FT6	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435685	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435686	2B2FB1	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435687	2B2FB2	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435688	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435689	2B2FB3	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435690	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435691	2B3CT1	CEILING TILE	50% CELLULOSE 40% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435692	2B3CT2	CEILING TILE	50% CELLULOSE 40% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435693	2B3CT3	CEILING TILE	50% CELLULOSE 40% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED

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202435694	2B3FT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435695	2B3FT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435696	2B3FT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435697	2B3FT4	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435698	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435699	2B3FT5	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435700	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435701	2B3FT6	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435702	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435703	2B3FB1	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435704	Layered	Yellow mastic backing	2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435705	2B3FB2	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435706	Layered	Yellow mastic backing	2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435707	2B3FB3	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435708	Layered	Yellow mastic backing	2% CELLULOSE 98% NON-FIBROUS	NONE DETECTED
202435709	2B1CT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435710	2B1CT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435711	2B1CT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435712	2B1FT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED

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202435713	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435714	2B1FT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435715	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435716	2B1FT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435717	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435718	2B1FT4	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435719	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435720	2B1FT5	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435721	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435722	2B1FT6	FLOOR TILE: Light blue	100% NON-FIBROUS	NONE DETECTED
202435723	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435724	2B1FB1	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435725	Layered	Cream mastic backing	100% NON-FIBROUS	NONE DETECTED
202435726	2B1FB2	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435727	Layered	Cream mastic backing	100% NON-FIBROUS	NONE DETECTED
202435728	2B1FB3	FLOOR BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435729	Layered	Cream mastic backing	100% NON-FIBROUS	NONE DETECTED
202435730	2B2CT1	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435731	2B2CT2	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED

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202435732	2B2CT3	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435733	2B2FT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435734	2B2FT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435735	2B2FT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435736	4OCT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435737	4OCT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435738	4OCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435739	4OFT1	FLOOR TILE: White floor tile	100% NON-FIBROUS	NONE DETECTED
202435740	4OFT2	FLOOR TILE: White floor tile	100% NON-FIBROUS	NONE DETECTED
202435741	4OFT3	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435742	4SCT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435743	4SCT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435744	4SCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435745	4SFT1	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435746	4SFT2	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435747	4SFT3	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED

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202435748	4ACT1	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435749	4ACT2	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435750	4ACT3	CEILING TILE	40% CELLULOSE 50% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435751	4AFT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435752	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435753	4AFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435754	4AFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435755	4AFT4	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435756	4AFT5	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435757	4AFT6	FLOOR TILE: White floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435758	HCT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435759	HCT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435760	HCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435761	HFT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435762	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435763	HFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED

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202435764	HFT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435765	HFT4	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435766	HFT5	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435767	HFT6	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435768	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435769	HFB1	FLORO BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435770	Layered	Yellow mastic backing	2% CELLULOSE 98% NON-FIBROUS	NONE DETETED
202435771	HFB2	FLORO BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435772	Layered	Yellow mastic backing	3% CELLULOSE 97% NON-FIBROUS	NONE DETETED
202435773	HFB3	FLORO BASE: Black vinyl	100% NON-FIBROUS	NONE DETECTED
202435774	Layered	Yellow mastic backing	2% CELLULOSE 98% NON-FIBROUS	NONE DETETED
202435775	3SCT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435776	3SCT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435777	3SCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435778	3SFT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435779	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435780	3SFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435781	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED

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202435782	3SFT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435783	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435784	3SFT4	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435785	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435786	3SFT5	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435787	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435788	3SFT6	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435789	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435790	3WCT1	CEILING TILES	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435791	3WCT2	CEILING TILES	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435792	3WCT3	CEILING TILES	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435793	3WFT1	FLOOR TILE: Gray floor tile	100% NON-FIBROUS	NONE DETECTED
202435794	Layered	Yellow mastic backing	100% NON-FIBROUS	NONE DETECTED
202435795	3WFT2	FLOOR TILE: Gray floor tile	100% NON-FIBROUS	NONE DETECTED
202435796	Layered	Yellow mastic backing	100% NON-FIBROUS	NONE DETECTED
202435797	3WFT3	FLOOR TILE: Gray floor tile	100% NON-FIBROUS	NONE DETECTED
202435798	Layered	Yellow mastic backing	100% NON-FIBROUS	NONE DETECTED
202435799	3GCT1	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED

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Tulsa, OK 74129
(918) 747-1330

AIHA Reference Lab #101372
Method EPA 600/R-93/116

202435800	3GCT2	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435801	3GCT3	CEILING TILE	45% CELLULOSE 45% FIBROUS GLASS 10% NON-FIBROUS	NONE DETECTED
202435802	1KFT1	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435803	1KFT2	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435804	1KFT3	FLOOR TILE: Purple floor tile	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435805	IKFT4	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435806	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435807	IKFT5	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435808	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED
202435809	IKFT6	FLOOR TILE: white floor tile	<1% CELLULOSE 100% NON-FIBROUS	NONE DETECTED
202435810	Layered	Yellow mastic backing	1% CELLULOSE 99% NON-FIBROUS	NONE DETECTED

RECEIVED: 08/05/24 **DATE ANALYZED:** 08/08-09/2024

QA/QC BY: JLS **ANALYST'S SIGNATURE:**

DEAN SWAIN

The result quantification reported are an estimation based on the methods of visual estimation which is considered only a semi-quantitative technique. Also, this report is indicative only of the sample material Environmental Hazard Control, Inc received. Results do not necessarily reflect the makeup of the entire span from which the samples were derived. Sampling techniques and/or sample handling may affect the integrity of the sample/s before submission to Environmental Hazard Control, Inc and hence the outcome of the laboratory results. Samples not destroyed by testing are retained a minimum of thirty days. This report shall not be reproduced in any way without the written consent of Environmental Hazard Control, Inc.

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TULSA, OK 7429 (918) 747-1330 FAX (918) 743-3961

TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME BTW REC CENTER
ADDRESS: 5363 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY TULSA	PROJECT NO:
STATE OK	CONTACT:
ZIP 74107	PHONE NO:
PHONE 918-241-1100	FAX NO:
FAX 918-447-2608	
SAMPLED BY: BRIAN SOARES	
LICENSE NO: 402115	

DISPOSAL: ____ LAB ____ EHCI ____ CUSTOMER ____ (EXPLAIN)

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	PLM 600R-93/116 USEPA	TEM BULK	POINT COUNT 1000 pt. 400 pt	COMMENTS
3GFT1	FLOOR TILE	NO	MISC	GOOD	X			
3GFT2	FLOOR TILE	NO	MISC	GOOD				
3GFT3	FLOOR TILE	NO	MISC	GOOD				
3GFT4	FLOOR TILE	NO	MISC	GOOD				
3GFT5	FLOOR TILE	NO	MISC	GOOD				
3GFT6	FLOOR TILE	NO	MISC	GOOD				
1CRCT1	CEILING TILE	NO	MISC	GOOD				
1CRCT2	CEILING TILE	NO	MISC	GOOD				
1CRCT3	CEILING TILE	NO	MISC	GOOD				
1CRFT1	FLOOR TILE	NO	MISC	GOOD				
1CRFT2	FLOOR TILE	NO	MISC	GOOD				
1CRFT3	FLOOR TILE	NO	MISC	GOOD				
1CRFT4	FLOOR TILE	NO	MISC	GOOD				
1CRFT5	FLOOR TILE	NO	MISC	GOOD				
1CRFT6	FLOOR TILE	NO	MISC	GOOD				
1KCT1	CEILING TILE	NO	MISC	GOOD				
1KCT2	CEILING TILE	NO	MISC	GOOD				
1KCT3	CEILING TILE	NO	MISC	GOOD	V			

Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
			TEC Martinez	8/5/24	12:05
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:	Date: 8-5-2024	

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TULSA, OK 7429 (918) 747-1330 FAX (918) 743-3961

TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME: BTW REC CENTER
ADDRESS: 5263 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY: TULSA	PROJECT NO:
STATE: OK	CONTACT:
ZIP: 74107	PHONE NO:
PHONE: 918-241-1100	FAX NO:
FAX: 918-447-2608	
SAMPLED BY:	BRIAN SOARES
LICENSE NO:	402115

DISPOSAL

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	USEPA PLM 600R-93/116	TEM BULK	POINT COUNT 400 1000 pt. pt.	COMMENTS
2B4 CT1	CEILING TILE	NO	MISC	GOOD				
2B4 CT2	CEILING TILE	NO	MISC	GOOD				
2B4 CT3	CEILING TILE	NO	MISC	GOOD				
2B4 FT1	FLOOR TILE	NO	MISC	GOOD				
2B4 FT2	FLOOR TILE	NO	MISC	GOOD				
2B4 FT3	FLOOR TILE	NO	MISC	GOOD				
2B4 FT4	FLOOR TILE	NO	MISC	GOOD				
2B4 FT5	FLOOR TILE	NO	MISC	GOOD				
2B4 FT6	FLOOR TILE	NO	MISC	GOOD				
2B4 FB1	FLOOR BASE	NO	MISC	GOOD				
2B4 FB2	FLOOR BASE	NO	MISC	GOOD				
2B4 FB3	FLOOR BASE	NO	MISC	GOOD				
1CL CT1	CEILING TILE	NO	MISC	GOOD				
1CL CT2	CEILING TILE	NO	MISC	GOOD				
1CL CT3	CEILING TILE	NO	MISC	GOOD				
1CL FT1	FLOOR TILE	NO	MISC	GOOD				
1CL FT2	FLOOR TILE	NO	MISC	GOOD				
1CL FT3	FLOOR TILE	NO	MISC	GOOD				

Relinquished by:	Date:	Time:	Accepted By:	Date: 8/5/24	Time: 1205
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:	Date: 8-5-2024	

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TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME: BTW REC CENTER
ADDRESS: 5263 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY TULSA	PROJECT NO:
STATE OK	CONTACT:
ZIP 74107	PHONE NO:
PHONE 918-241-1100	FAX NO:
FAX 918-447-2608	
SAMPLED BY: BRIAN SOARES	
LICENSE NO: 40211.5	

DISPOSAL

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	PLM 600R-93/116 (ISBPA)	TEM BULK	POINT COUNT 400 1000 pt.	COMMENTS
282 FT4	Floor Tile	NO	MISC	Good				
282 FT5	Floor Tile	NO	MISC	Good				
282 FT6	Floor Tile	NO	MISC	Good				
282 FB1	Floor Base	NO	MISC	Good				
282 FB2	Floor Base	NO	MISC	Good				
282 FB3	Floor Base	NO	MISC	Good				
283 CT1	Ceiling Tile	NO	MISC	Good				
283 CT2	Ceiling Tile	NO	MISC	Good				
283 CT3	Ceiling Tile	NO	MISC	Good				
283 FT1	Floor Tile	NO	MISC	Good				
283 FT2	Floor Tile	NO	MISC	Good				
283 FT3	Floor Tile	NO	MISC	Good				
283 FT4	Floor Tile	NO	MISC	Good				
283 FT5	Floor Tile	NO	MISC	Good				
283 FT6	Floor Tile	NO	MISC	Good				
283 FB1	Floor Base	NO	MISC	Good				
283 FB2	Floor Base	NO	MISC	Good				
283 FB3	Floor Base	NO	MISC	Good				

LAB
EHCI
CUSTOMER
(EXPLAIN)

Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
				8/5/24	12:00
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:	Date: 8-8-2024	

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TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME BTW REC CENTER
ADDRESS: 5263 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY TULSA	PROJECT NO:
STATE OK	CONTACT:
ZIP 74107	PHONE NO:
PHONE 918-241-1100	FAX NO:
FAX 918-447-2608	
SAMPLED BY: BRIAN SOARES	
LICENSE NO: 40211.5	

DISPOSAL: ____ LAB ____ EHCI ____ CUSTOMER ____ (EXPLAIN)

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	USEPA FLM 600R-93/116	TEM BULK	POINT COUNT 400 1000 pt.	COMMENTS
2B1CT1	CEILING TILE	NO	MISC	GOOD				
2B1CT2	CEILING TILE	NO	MISC	GOOD				
2B1CT3	CEILING TILE	NO	MISC	GOOD				
2B1FT1	FLOOR TILE	NO	MISC	GOOD				
2B1FT2	FLOOR TILE	NO	MISC	GOOD				
2B1FT3	FLOOR TILE	NO	MISC	GOOD				
2B1FT4	FLOOR TILE	NO	MISC	GOOD				
2B1FT5	FLOOR TILE	NO	MISC	GOOD				
2B1FT6	FLOOR TILE	NO	MISC	GOOD				
2B1FB1	FLOOR BASE	NO	MISC	GOOD				
2B1FB2	FLOOR BASE	NO	MISC	GOOD				
2B1FB3	FLOOR BASE	NO	MISC	GOOD				
2B2CT1	CEILING TILE	NO	MISC	GOOD				
2B2CT2	CEILING TILE	NO	MISC	GOOD				
2B2CT3	CEILING TILE	NO	MISC	GOOD				
2B2FT1	FLOOR TILE	NO	MISC	GOOD				
2B2FT2	FLOOR TILE	NO	MISC	GOOD				
2B2FT3	FLOOR TILE	NO	MISC	GOOD				

Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
			MCIC Martinez	8/5/24	1208
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:	Date: 8-8-2024	

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TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:		PROJECT INFORMATION:	
NAME:	AMERICAN DEMOLITION	PROJECT NAME	BTW REC CENTER
ADDRESS	5263 S 65TH W AVE	LOCATION:	209 N GRAY ST
CITY	TULSA	PROJECT NO:	
STATE	OK	CONTACT:	
ZIP	74107	PHONE NO:	
PHONE	918-241-1100	FAX NO:	
FAX	918-447-2608		
		SAMPLED BY:	BRIAN SOARES
		LICENSE NO:	402115

DISPOSAL: LAB / EHCI / CUSTOMER / (EXPLAIN)

SAMPLE NO.	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	PLM 600R-93-116 USEPA	TEM BULK	POINT COUNT 1000 pt. 400 pl.	COMMENTS
40CT1	CEILING TILE	NO	MISC	GOOD				
40CT2	CEILING TILE	NO	MISC	GOOD				
40CT3	CEILING TILE	NO	MISC	GOOD				
40FT1	FLOOR TILE	NO	MISC	GOOD				
40FT2	FLOOR TILE	NO	MISC	GOOD				
40FT3	FLOOR TILE	NO	MISC	GOOD				
45CT1	CEILING TILE	NO	MISC	GOOD				
45CT2	CEILING TILE	NO	MISC	GOOD				
45CT3	CEILING TILE	NO	MISC	GOOD				
45FT1	FLOOR TILE	NO	MISC	GOOD				
45FT2	FLOOR TILE	NO	MISC	GOOD				
45FT3	FLOOR TILE	NO	MISC	GOOD				
4ACT1	CEILING TILE	NO	MISC	GOOD				
4ACT2	CEILING TILE	NO	MISC	GOOD				
4ACT3	CEILING TILE	NO	MISC	GOOD				
4AFT1	FLOOR TILE	NO	MISC	GOOD				
4AFT2	FLOOR TILE	NO	MISC	GOOD				
4AFT3	FLOOR TILE	NO	MISC	GOOD				

Relinquished by:	Date:	Time:	Accepted By:	Date:	Time: 1208
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:		Date: 8-9-2024

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TULSA, OK 7429 (918) 747-1330 FAX (918) 743-3961

TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION
NAME: American Demolition	PROJECT NAME BTW Rec Center
ADDRESS: 5263 S 65th W Ave	LOCATION: 209 N Gray ST
CITY Tulsa	PROJECT NO:
STATE OK	CONTACT:
ZIP 74107	PHONE NO:
PHONE 918-241-1100	FAX NO:
FAX 918-447-2608	
SAMPLED BY: Brian Soares	
LICENSE NO: 402115	

DISPOSAL: ____ LAB ____ EHCI ____ CUSTOMER ____ (EXPLAIN)

SAMPLE NO.	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	USEPA PLM 600R-93/116	TEM BULK	400 POINT COUNT 1400 pt.	COMMENTS
4AFT4	Floor Tile	NO	MISC	Good				
4AFT5	Floor Tile	NO	MISC	Good				
4AFT6	Floor Tile	NO	MISC	Good				
HCT1	Ceiling Tile	NO	MISC	Good				
HCT2	Ceiling Tile	NO	MISC	Good				
HCT3	Ceiling Tile	NO	MISC	Good				
HFT1	Floor Tile	NO	MISC	Good				
HFT2	Floor Tile	NO	MISC	Good				
HFT3	Floor Tile	NO	MISC	Good				
HFT4	Floor Tile	NO	MISC	Good				
HFT5	Floor Tile	NO	MISC	Good				
HFT6	Floor Tile	NO	MISC	Good				
HFB1	Floor Base	NO	MISC	Good				
HFB2	Floor Base	NO	MISC	Good				
HFB3	Floor Base	NO	MISC	Good				

Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
			Nicole Martinez	8/5/24	1209
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024		Analyzed By:		Date: 8-9-2024	

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TULSA, OK 7429 (918) 747-1330 FAX (918) 743-3961

TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME: BTW REC CENTER
ADDRESS: 5263 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY: TULSA	PROJECT NO:
STATE: OK	CONTACT:
ZIP: 74107	PHONE NO:
PHONE: 918-241-1100	FAX NO:
FAX: 918-447-2608	
SAMPLED BY:	BRIAN SOARES
LICENSE NO:	40211.5

DISPOSAL: ____ LAB ____ EHCI ____ CUSTOMER ____ (EXPLAIN)

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	USEPA PLM 600R-93/116	TEM BULK	400 POINT COUNT 1000 pt.	COMMENTS
3SCT1	CEILING TILE	NO	MISC	GOOD				
3SCT2	CEILING TILE	NO	MISC	GOOD				
3SCT3	CEILING TILE	NO	MISC	GOOD				
3SFT1	FLOOR TILE	NO	MISC	GOOD				
3SFT2	FLOOR TILE	NO	MISC	GOOD				
3SFT3	FLOOR TILE	NO	MISC	GOOD				
3SFT4	FLOOR TILE	NO	MISC	GOOD				
3SFT5	FLOOR TILE	NO	MISC	GOOD				
3SFT6	FLOOR TILE	NO	MISC	GOOD				
3WCT1	CEILING TILE	NO	MISC	GOOD				
3WCT2	CEILING TILE	NO	MISC	GOOD				
3WCT3	CEILING TILE	NO	MISC	GOOD				
3WFT1	FLOOR TILE	NO	MISC	GOOD				
3WFT2	FLOOR TILE	NO	MISC	GOOD				
3WFT3	FLOOR TILE	NO	MISC	GOOD				
3GCT1	CEILING TILE	NO	MISC	GOOD				
3GCT2	CEILING TILE	NO	MISC	GOOD				
3GCT3	CEILING TILE	NO	MISC	GOOD				

Relinquished by:	Date:	Time:	Accepted By:	Date: 8/5/24	Time: 1209
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024			Analyzed By:		Date: 8-9-2024

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TULSA, OK 7429 (918) 747-1330 FAX (918) 743-3961

TURNAROUND (Please Circle)
RUSH SAME DAY 24 HR 3 Day (5 Day)

BILL TO:	PROJECT INFORMATION:
NAME: AMERICAN DEMOLITION	PROJECT NAME: BTW REL CONTROL
ADDRESS: 5263 S 65TH W AVE	LOCATION: 209 N GRAY ST
CITY: TULSA	PROJECT NO:
STATE: OK	CONTACT:
ZIP: 74107	PHONE NO:
PHONE: 918-241-1100	FAX NO:
FAX: 918-447-2608	
SAMPLED BY: BRIAN SOARES	
LICENSE NO: 402115	

SAMPLE NO:	SAMPLE DESCRIPTION	FRIABLE (YES/NO)	TSI SUR MISC	CONDITION: GOOD DAMAGED SIGNIFICANTLY	DISPOSAL: USEPA PLM 600/R-93/116	DISPOSAL: TEM BULK	DISPOSAL: 400 POINT COUNT 1000 pt. pL	COMMENTS
1KFT1	FLOOR TILE	NO	MISC	GOOD				
1KFT2	FLOOR TILE	NO	MISC	GOOD				
1KFT3	FLOOR TILE	NO	MISC	GOOD				
1KFT4	FLOOR TILE	NO	MISC	GOOD				
1KFT5	FLOOR TILE	NO	MISC	GOOD				
1KFT6	FLOOR TILE	NO	MISC	GOOD				

DISPOSAL: ____ LAB ____ EHCI ____ CUSTOMER ____ (EXPLAIN)

	Date:	Time:	Accepted By:	Date:	Time:
Relinquished by:			Accepted By:	8/05/24	12:09
Relinquished by:	Date:	Time:	Accepted By:	Date:	Time:
Date Sampled: 8-2-2024		Analyzed By:		Date: 8-9-2024	

SECTION 00 6000
PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:

1. Contract Between Owner and Contractor: City of Sapulpa standard construction agreement. Any other contract, agreement, provision, general condition or supplemental condition that is contrary to or inconsistent with the City of Sapulpa Construction Contract is null and void and of no force or effect.
2. The General Conditions for Project are AIA Document A201-2017, "General Conditions of the Contract for Construction," as modified and provided by the Owner.

    a. The General Conditions are incorporated by reference.

3. The Supplementary Conditions for Project are incorporated are included in this Project Manual.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.

B. Copies of AIA standard forms may be obtained from the American Institute of Architects; http://www.aia.org/contractdocs/purchase/index.htm; docspurchases@aia.org; (800) 942-7732.

C. Preconstruction Forms:

1. Form of Performance Bond and Labor and Material Bond: AIA Document A312, "Performance Bond and Payment Bond."
2. Form of Certificate of Insurance: AIA Document G715, "Supplemental Attachment for ACORD Certificate of Insurance 25-S."

D. Information and Modification Forms:

1. Form for Requests for Information (RFIs): AIA Document G716, "Request for Information (RFI)," or other form approved by the Architect.
2. Form of Request for Proposal: AIA Document G709, "Work Changes Proposal Request."
3. Change Order Form: AIA Document G701, "Change Order."
4. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G707, "Architect's Supplemental Instructions."
5. Form of Change Directive: AIA Document G714, "Construction Change Directive."

E. Payment Forms:

1. Schedule of Values Form: AIA Document G703, "Continuation Sheet."
2. Payment Application: AIA Document G702/703, "Application and Certificate for Payment and Continuation Sheet."
3. Form of Contractor's Affidavit: AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
4. Form of Affidavit of Release of Liens: AIA Document G706A, "Contractor's Affidavit of Payment of Release of Liens."
5. Form of Consent of Surety: AIA Document G707, "Consent of Surety to Final Payment."

END OF DOCUMENT 00 6000

SECTION 00 6001
BONDS AND CERTIFICATES

PART 1 - GENERAL

1.1 SURETY BONDS

A. Bond Requirements

1. Three bonds are required for all contracts. They are:

   a. Performance Bond to ensure the completion of the work in accordance with the contract documents at the time stipulated.
   b. Defect Bond to provide for defects in construction or materials for a period of one (1) year from the date of acceptance of the completed work; and
   c. Payment Bond to assure the Owner is protected from the action of subcontractors, suppliers and employees for unpaid debts of the Contractor.
   d. Non - Collusion Affidavit.
   e. Business Relationship Affidavit.
   f. Statutory Bond.

Part 2 – Not Used

PART 3 – Not Used

END OF SECTION 00 6001

DOCUMENT 00 6002
NON-COLLUSION AFFIDAVIT

THIS AFFIDAVIT SHALL ACCOMPANY THE BID:

A. NONCOLLUSION AFFIDAVIT

STATE OF _____)
) ss.
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says, that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee, or any official of the **City of Sapulpa**, or any of their employees as to quantity, quality, or price in the prospective contract, or any other terms of said prospective contract, or in any discussion between bidders and any state or official of the **City of Sapulpa Oklahoma,** or any of their employees concerning exchange of money or other items of value for special consideration in the letting of a contract known as construction of the **Booker T. Washington Recreation Center, Sapupla Oklahoma.**

_____
Signature and Title

Subscribed and Sworn to before me this _____ day of _____, 20__

_____
Notary Public

My Commission Expires:_____ (Seal)

END OF DOCUMENT 00 6002

DOCUMENT 00 6003
BUSINESS RELATIONSHIP AFFIDAVIT

THIS AFFIDAVIT SHALL ACCOMPANY THE BID:

A. BUSINESS RELATIONSHIP AFFIDAVIT

STATE OF _____)
) ss.
COUNTY OF _____)

_____, of lawful age, being first duly sworn on oath, deposes and states that (s) he is the agent authorized by the bidder to submit the accompanying bid. Affidavit further states as follows:

1. The nature of any partnership, joint or other business relationship in effect or which existed within one year prior to the date of such statement with the Architect, Engineer or other party to the project known as the construction of the **CITY OF SAPULPA,** Oklahoma (the "Project"), is as follows:

2. Any business relationship in effect or which existed within one year of the date of this written statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the Project is as follows:

3. The names of all persons having any of such business relationships and the positions they hold with their respective companies or firms are as follows: None of the above-described business relationships exist unless specifically indicated above.

_____
Signature and Title

Subscribed and sworn to before me this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires: _____ (Seal)

END OF DOCUMENT 00 6003

PART 1 - GENERAL

1.1 PERFORMANCE BOND

A. The successful bidder will be required to furnish and pay for a Bond covering the faithful performance of the Contract (Refer to Section 00 2113 – Instructions to Bidders). The Bidder shall deliver said Bond with their executed Contract.

1. NOTE: Any successful Bidder whose Total Contract Scope of Work is less than $50,000 will NOT be required to provide a Performance Bond. An example of this bond document follows.

PART 2 – Not Used

PART 3 – Not Used

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____, as principal, and _____ _____, a corporation organized under the laws of the State of _____, and authorized to transact business in the State of Oklahoma, as Surety, as held and firmly bound unto _ _____ in the penal sum of _____ _____, Dollars ($_____) lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said principal entered into a written contract with _____ dated _____, 20____, for _____, in compliance with the plans and specifications therefore, made a part of said contract, and on file in the office Of _____.

NOW THEREFORE, if said principal shall, in all particular, well, truly and faithfully perform and abide by said contract, and each and every covenant, condition and part thereof, and shall fulfill all obligations resting upon said principal by the terms of said contract, and said specifications; and if said principal shall promptly pay, or cause to be paid, all labor, materials and/or repairs and all bills for labor performed on said work, whether by sub-contract or otherwise; and if said principal shall protect and save harmless said District from all loss, damage and expense to life or property suffered or sustained by any person, firm or corporation, caused by said principal or his or its agents, servants, or employees in the misconduct in guarding and protecting the same, or from any act or omission of said principal or his or its agents, servants, or employees and if said principal shall protect and save the District, all damage, loss and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of one year from and after acceptance of said project by the District; and if said principal shall save and hold the District harmless from all damages, loss and expense occasioned by or resulting from any failure whatsoever of said principal, then this obligation shall be null and void; otherwise to be and remain in full force and effect.

If the principal shall fail or neglect to pay any person, firm, or corporation for labor, materials, and/or repairs used on said work, or materials employed or used by said principal in performing said contract, within 30 days after the same becomes due and payable, any such person, firm or corporation entitled thereto may sue and recover on this bond, the amount so due and unpaid.

And it is further expressly agreed and understood by the parties hereto, that no changes or alterations in said contract and no deviations from the plan or mode or procedure herein fixed, shall have the effect of releasing the sureties, or any of them from the obligations of this bond.

IN TESTIMONY WHEREOF, the said principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed by its Attorney-in-Fact, duly authorized so to do, the day and year first above written.

Attest:

By: _____

Its: _____

[CORPORATE SEAL]

[SEAL]

_____
(Principal/Company)

By: _____
(Sign Name)

_____
(Print Name)

Its: _____
(Title)

_____
(Surety Company)

By: _____
(Sign Name)

_____
(Print Name)

Its: Attorney-in-Fact

(Accompany this bond with Attorney-in-Fact's Authority from the Surety Company certified to include the date of the bond.)

END OF SECTION 00 6113

PART 1 - GENERAL

1.1 STATUTORY BOND

A. The successful bidder will be required to furnish and pay for a Bond covering payment obligations arising under the Contract (Refer to Section 00 2113 – Instructions to Bidders). The Bidder shall deliver said Bond with their executed Contract.

1. NOTE: Any successful Bidder whose Total Contract Scope of Work is less than $50,000 will NOT be required to provide a Statutory Bond. An example of this bond document follows.

PART 2 – Not Used

PART 3 – Not Used

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS: That _____, as principal, and _____ _____, a corporation organized under the laws of the State of _____, and authorized to transact business in the State of Oklahoma, as Surety, as held and firmly bound unto _ _____ in the penal sum of _____ _____, Dollars ($_____) lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said principal entered into a written contract with _____ _____dated _____, 20__, for _____, all in compliance with the plans and specifications therefore, made a part of said contract, and on file in the office Of _____.

NOW THEREFORE, if said principal shall fail or neglect to pay all indebtedness incurred by said principal or subcontractors of said principal who perform work in the performance of such contract, for labor and materials and repairs to and parts for equipment used and consumed in the performance of said contract after the same becomes due and payable, the person, firm, or corporation entitled thereto may sue and recover on this bond, the amount so due and unpaid.

It is further expressly agreed and understood by the parties hereto, that no changes or alterations in said contract and no deviations from the plan or mode or procedure herein fixed, shall have the effect of releasing the sureties, or any of them from the obligations of this bond.

STATUTORY BOND

IN TESTIMONY WHEREOF, the said principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its Attorney-in-Fact, duly authorized so to do, the day and year set forth below.

Dated this _____ day of _____, 20____.

Attest:

By: _____

Its: _____

[CORPORATE SEAL]

[SEAL]

_____
(Principal/Company)

By: _____
(Sign Name)

_____
(Print Name)

Its: _____
(Title)

SURETY:

_____

By: _____
(Attorney-in-Fact)

(Type) Name: _____

Address: _____

City: _____ State _____

Telephone: _____

END OF SECTION 00 6116

SECTION - 00 6119
DEFECT BOND

PART 1 - GENERAL

1.1 DEFECT BOND

A. The successful bidder will be required to furnish and pay for a Bond covering defective workmanship or materials which may arise during the one year following completion and acceptance of the project. (Refer to Section 00 2113 – Instructions to Bidders). The Bidder shall deliver said Bond with their executed Contract.

1. NOTE: Any successful Bidder regardless of their Total Contract Scope of Work Amount WILL be required to provide a Defect Bond. An example of this bond document follows.

PART 2 – Not Used

PART 3 – Not Used

DEFECT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____, as principal, and _____ _____, a corporation organized under the laws of the State of _____, and authorized to transact business in the State of Oklahoma, as Surety, as held and firmly bound unto _ _____ in the penal sum of _____ _____, Dollars ($_____) lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said principal entered into a written contract with _____ _____dated _____, 20__, for _____, all in compliance with the plans and specifications therefore, made a part of said contract, and on file in the office Of _____.

NOW THEREFORE, if said principal shall pay or cause to be paid to _____ all damage, loss and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of one (1) year from and after the acceptance of said project by the _____; then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto, that no changes or alterations in said contract and no deviations from the plan or mode or procedure herein fixed, shall have the effect of releasing the sureties, or any of them from the obligations of this bond.

IN WITNESS WHEREOF, the said principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents be executed in its name authorized so to do, the day and year set forth below.

DEFECT BOND

Dated this _____ day of _____, 20____.

Attest:

By: _____

Its: _____

[CORPORATE SEAL]

[SEAL]

_____
(Principal/Company)

By: _____
(Sign Name)

_____
(Print Name)

Its: _____
(Title)

SURETY:

_____

By: _____
(Attorney-in-Fact)

(Type) Name: _____

Address: _____

City: _____ State _____

Telephone: _____

END OF SECTION 00 6119

SECTION - 00 7200
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 - GENERAL

1.1 GENERAL CONDITIONS

A. General Conditions of the Contract for Construction, American Institute of Architects' document A201™ – 2017, consisting of 15 articles and their subsections and as amended in the Supplementary Conditions (Section 00 7300).

END OF SECTION 00 7200

SECTION 00 7300
SUPPLEMENTARY CONDITIONS

The following supplements modify AIA Document A201-2017, "General Conditions of the Contract for Construction," 2017 edition. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

ARTICLE 1 GENERAL PROVISIONS

1.1.8 Initial Decision Maker: Change the second sentence to read:
"The Architect as the Initial Decision Maker, after consultation with the Owner's Inspector, shall not show partiality to the Owner or the Contractor and shall not be liable for results for interpretations or decisions rendered in good faith."

1.2 Correlation and Intent of the Contract Documents

1.2.1 Change the second sentence to read:
"The Contract Documents are complementary, and what is required by one shall be as binding as if required by all, and what is shown on one Drawing shall be as binding as if shown on all Drawings; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results."

Add the following subparagraphs 1.2.1.2 and 1.2.1.3 to paragraph 1.2:

1.2.1.2 In the event of conflicts or discrepancies among the Contract Documents, interpretations shall be based on the following priorities:

1. Addenda, with those of later date having precedence over those of earlier date.
2. The Supplementary Conditions.
3. The General Conditions of the Contract for Construction.
4. Division 1 of the Specifications.
5. Drawings and Division 2-49 of the Specifications. In the case of conflicts or discrepancies between Drawings and Divisions 2-49 of the Specifications, or within either Document not clarified by Addendum, the Architect will determine which takes precedence in accordance with Section 4.2.12.
6. Alternates in the contract documents

1.2.1.3 If there is a conflict between any Drawings, or Drawings and Specifications, the General Contractor shall notify the Architect or Engineer in writing of the conflict, and request clarification in writing by the Architect or Engineer prior to bidding. If such clarification is not sought, or, if sought, is not received in a timely manner prior to bidding, the General Contractor shall use the most expensive or best quality product or method. Failure to seek clarification of any conflict in the documents will not relieve the General Contractor from providing in his price an amount to perform the Work.

Change paragraph 1.3 to read:

1.3 Capitalization:

"Terms capitalized in these General Conditions. Include those that are (1) specifically defined, (2) the

titles of numbered articles, or (3) the titles of other applicable documents published by the American Institute of Architects."

ARTICLE 2 OWNER

2.1 General

2.1.1 Change the second sentence to read: "The Owner shall designate the representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization."

2.2.4 Change the second sentence to delete the words "or arbitrators".

ARTICLE 3 GENERAL CONTRACTOR

3.2 Review of Contract Documents and Field Conditions by General Contractor

Change paragraph 3.2.2 as follows:
In the second sentence change the phrase "request for information" to "request for interpretation".

Change paragraph 3.2.3 as follows:
In the first sentence change the phrase "request for information" to "request for interpretation".

Delete the third and fourth sentences of Section 3.2.4 and substitute the following sentence:

3.2.4 "If the General Contractor performs those obligations, the General Contractor shall not be liable to the Owner or the Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Document, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities."

Add the following Subsection 3.2.5 to Section 3.2:

3.2.5 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for the Architect to evaluate and respond to the General Contractor's requests for interpretation, where such information was available to the General Contractor from a careful study and comparison to the Contract Documents, field conditions, other Owner-provided information, General Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

Add the following Section 3.2.6 to Section 3.2:

3.2.6 The General Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Section 3.12.

3.4 Labor and Materials

Add the following subparagraphs 3.4.2.1 and 3.4.2.2 to paragraph 3.4.2:

3.4.2.1 After the Contract has been executed, the Owner and the Architect will consider a formal request for substitution of products in place of those specified only under the conditions set forth in Division 01 Specification Section "Product Requirements."

3.4.2.2 By making requests of substitutions based on Subparagraph 3.4.2.1 above, the General Contractor:

.1 represents that the General Contractor has personally investigated the proposed substitute

product and determined that it is equal or superior in all respects to that specified.

.2 represents that the General Contractor will provide the same warranty for the substitution that the General Contractor would for that specified.

.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims of additional costs related to the substitution which subsequently become apparent; and

.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

3.5 Warranty

3.5.1 Change the last sentence to read: "If required by the Architect or Inspector, the Contractor shall furnish satisfactory evidence of the kind and quality of materials and equipment."

3.6 Taxes

Change the first sentence to read: "The Contractor shall pay applicable sale, consumer, use and similar taxes…."

Add the following Section 3.6.1 to Section 3.6:

3.6.1 The General Contractor assumes full responsibility for the payment of all contributions and payroll taxes (state and federal) as to all sub-General Contractors, sub-contractors, and employees engaged in the performance of work pursuant hereto, and further agrees to check and meet all requirements that might be specified under regulations of the administrative official or board charged with the enforcement of any state or federal act on the subject referred to. General Contractor agrees to furnish the Owner, upon request, a certificate or other evidence of compliance therewith.

3.7 Permits, Fees, Notices and Compliance with Laws

Add the following subparagraph 3.7.1.1:

3.7.1.1 The Contractor shall pay for cost of the Building Permit and all inspection and other fees incurred from the City of Sapulpa, Oklahoma for this Project**.**

3.9 Superintendent

3.9.1 Change the first sentence of paragraph 3.9.1 to read: "The Contractor shall employ a competent, full-time superintendent and necessary assistants who shall be in attendance at the Project site during the performance of the Work."

Add the following subparagraph 3.9.4:

3.9.4 The Contractor shall provide suitable temporary on-site job trailer, including restroom facility, each for the Superintendent and the Inspector during the term of construction.

3.10 General Contractor's Construction and Submittal Schedules

Delete subparagraph 3.10.3 and substitute the following:

3.10.3 The General Contractor shall perform the Work in Accordance with the General Contractor's generated and approved construction schedule within the contract time specified.

ARTICLE 5 SUBCONTRACTORS

Delete paragraph 5.2.2 in its entirety and insert in its place the following:

5.2.2 The Contractor, as soon as practicable after the award of the Contract, shall notify the Owner of project employment opportunities for qualified persons or entities who may provide skilled or unskilled services and materials or supplies.

ARTICLE 7 CHANGES IN THE WORK

Delete subparagraph 7.3.7.5 and substitute the following:

7.3.7.5 Additional costs of added supervision and field office personnel only if the increased scope of Work requires added personnel, and only with the approval of the Owner.

ARTICLE 8 TIME

8.1 Definitions

Change paragraph 8.1.1 to read as follows:

8.1.1 Unless otherwise provided, the Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work after the Notice to Proceed has been given to the Contractor.

8.2 Progress and Completion

Change paragraph 8.2.3 to read as follows:

8.2.3 The General Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time, and Final Completion within 30 days thereafter.

8.3 Delays and Extensions of Time:

8.3.1 (4) Change to read: "(4) by delay authorized by the Owner".

ARTICLE 9 PAYMENTS AND COMPLETION

9.3 Applications for Payment

9.3.1 Add the following sentence at the end of subparagraph 9.3.1:

"The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, latest edition, supported by AIA Document G703, Continuation Sheet, latest edition.

9.4.1 Change the first sentence to read:

9.4.1 The Architect will, after consultation with and approval by the Owner's Inspector, within seven days after receipt of the Contractor's Application for Payment, either…."

9.4.2 Change the first sentence to read:

9.4.2 "The issuance of a Certificate of Payment will constitute a representation by the Architect to the Owner, based on the Architect's and Owner's Inspector's evaluation of the Work…."

9.7 Failure of Payment: Change the first sentence to read:

"If the Architect does not issue a Certificate for payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the

Contractor within thirty days after the date established in the Contract Documents, the amount certified by the Architect,…then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop Work until payment of the amount owing has been received…."

9.8 Substantial Completion
Add the following subparagraph 9.8.6 to Article 9.8:
9.8.6 Obtain Occupancy Permit issued by the local municipal authority or other authority jurisdiction, and other applicable regulatory entity and consultant-based inspections and certificates of Substantial Completion.

9.10.2 Final Completion and Final Payment
Add the following subparagraph 9.10.2.1 to Article 9.10.2:

9.10.2.1 Liquidated Damages: Contractor and Owner recognize that time is of the essence in this Agreement and that Owner will suffer financial and other losses if Substantial Completion is not achieved within the Contract Time. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Owner and Contractor agree that Contractor shall pay Owner (zero) $0 dollars per day for each day that the Contractor shall not have achieved Substantial Completion as specified in this Agreement, as modified by any properly approved Change Orders. Oklahoma Department of Transportation weather days shall be included in the construction schedule and shall not be a cause for a Change Order.

9.10.2.2 Damages: If the Contractor shall not have achieved Substantial Completion within the Contract Time, as may have been modified by properly approved Change Orders, the contractor shall not be entitled to Division 01 0000 requirements, general condition / requirements, mobilization, expenses for overhead and profit, and bond premiums until Substantial Completion has been achieved. Oklahoma Department of Transportation weather days shall be included in the construction schedule and shall not be a cause for a change order. The Contractor shall not receive additional funds from the Owner any excess money required to satisfy the claim prior to release of liens and written consent of Surety."

ARTICLE 11 INSURANCE AND BONDS

Change title to read:
11.1 General Contractor's Insurance and Bonds

Add subparagraphs 11.1.1.1 and 11.1.1.2 as follows:
11.1.1.1 Property Insurance: The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" with renovation endorsement or wrap-around type builder's risk policy, or equivalent policy form, in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles.
11.1.1.2 Additional Insureds: All insurance listed under this Section shall name to Owner, the Architect, and the Architect's consultants as Additional Insureds.

Add the following subparagraphs to paragraph 11.1.2:
11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the coverages and limits of liability specified below, or greater if required by law:

Workman's Compensation:		Statutory, but not less than $300,000;
Bodily Injury Liability		$500,000 per occurrence;
Personal Injury Liability		$500,000 per occurrence;
Property Damage		$150,000 per occurrence.
Commercial General Liability (including Premises-Operations; Products and Completed Operations; Broad Form Property Damage):		
(a)	Each Occurrence	$1,000,000
(b)	Personal Injury Limit	$1,000,000
Business Auto Liability (including owned, non-owned, and hired vehicles)		
(a)	Combined Single Limit of Liability	$1,000,000
Umbrella Excess Liability over Primary Insurance:		
(a)	Each Occurrence	$2,000,000

11.1.2.2 If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G705, Certificate of Insurance. If this insurance is written on a Commercial General Liability policy form, ACORD Form 25S will be acceptable.

11.1.2.3 The maintenance of insurance by the General Contractor and the limits of coverage required shall in no way limit or affect the extent of the General Contractor's Liability.

Add the following sentences to the end of subparagraph 11.1.1:
"The form of policy for this coverage shall be Completed Value. If the Owner is damaged by the failure of the General Contractor to maintain such insurance, then the General Contractor shall bear all reasonable costs properly attributable thereto."

Add the following subparagraphs to 11.4:
11.4.1 Premiums for General Contractor's insurance are reimbursable with the exception of any unusual or additional premiums incurred due to extended time required to complete Work which exceeds all Owner-approved time extensions.

11.4.2 The Cost of Premiums for Work not completed will not be chargeable to the Owner.

11.4.3 Before an exposure to loss may occur, the General Contractor shall file with the Owner and the Architect one certificate of insurance stating limits of coverage of this Property Insurance coverage, naming endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the General Contractor, the Owner, and the Architect.

ARTICLE 13 MISCELLANEOUS PROVISIONS
Change the entire paragraph 13.1 to read:

13.1 Governing Law
The Contract shall be governed by the applicable laws of the United States of America, and the State of Oklahoma.

Change paragraph 13.5 to read:
13.5 No Interest
Payments due and unpaid under the Contract Documents shall bear no interest from the date payment is due at the rate the parties agreed upon in writing or, in the absence thereof, at the legal rate prevailing at from time to time at the place where the Project is located.

ARTICLE 15 CLAIMS AND DISPUTES
15.1.3.1 Change the first sentence of Paragraph 15.1.3.1 to read:
"Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to the expiration of the period for correction of the Work set forth in Section 12.2.2. shall be initiated by notice to the other party…with a copy sent to the Architect."

15.1.3.2: Delete the last sentence of the paragraph in its entirety.

Change paragraph 15.1.4 to read as follows:
15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Owner's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of and after consultation with and approval by the Inspector.

15.2 Change paragraph title to read:
15.2 Initial Decision by Architect
15.2.1 Change the third and fourth sentences to read as follows:
"Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to resolution of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand…resolution without a decision having been rendered."
15.2.5 Delete the last sentence of the paragraph.
15.2.6 Delete paragraph 15.2.6 and all its subparagraphs in their entirety.

15.3 Mediation Delete paragraph 15.3 and all its subparagraphs in their entirety.

15.4 Arbitration Delete paragraph 15.4 and all its subparagraphs in their entirety.
Add the following Article 16:

END OF SECTION 00 7300

SECTION 01 1000
SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project Information
2. Worked covered by Contract Documents
3. Owner-furnished products.
4. Access to site.
5. Work restrictions.
6. Specification and drawings conventions.
7. Miscellaneous provisions.

B. Related Requirements:

1. Section 01 5000 “Temporary Facilities and Controls” for limitations and procedures governing temporary use of Owner’s facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Booker T. Washington Recreation Center

1. Project Location: 209 North Gray Street, Oklahoma 74066.

B. Architect: Studio45 Architects, 1648 Southwest Boulevard, Tulsa, Oklahoma 74107.

1. Katie Huisenga, Principal-in-Charge. 918-392-4958.
2. katie@s45architects.com.
3. www.s45architects.com.

C. Architect’s Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Mechanical, Electrical and Engineering: CEC Engineering.
2. Structural Engineer: 360 Engineering
3. Civil Engineer: Wallace Design Collective
4. Landscape Architecture: Wallace Design Collective

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Construction of two new one-story buildings separately housing tribal transportation operations and a center for services for tribal elders and veterans, joined by a common outdoor covered plaza, as well as site improvements including parking.

B. Type of Contract:

1. Project will be constructed by a general contractor selected by competitive bid.

1.4 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.

1.5 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.6 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each portion of the Work to be occupied prior to Owner acceptance of completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanically and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise indicated.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, dust, or other disruption to Owner or scheduled users of the park.

1. Notify Architect and Owner not less than two days in advance of proposed disruptive operations.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words and phrases when used in particular situations.

1. Imperative mood and streamlined language are generally used in the Specifications. The words “shall”, “shall be”, or “shall comply with”, depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products.

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviates schedule on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1000

SECTION - 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 PAYMENT PROCEDURES

A. Submit a Schedule of Values at least seven days before the initial Application for Payment. Break down the Contract Sum into at least one line item for each Specification Section in the Project Manual table of contents. Coordinate the schedule of values with Contractor's construction schedule.
   1. Arrange schedule of values consistent with format of AIA Document G703.
   2. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
   3. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   4. Provide separate line items in the schedule of values for initial cost of materials and for total installed value of that part of the Work.
   5. Provide a separate line item in the schedule of values for each allowance.

B. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

C. Submit three copies of each application for payment according to the schedule established in Owner/Contractor Agreement.
   1. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor.
   2. With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

D. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

E. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.

4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707-1994, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2000

SECTION 01 2100
ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.

C. Related Sections:

1. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.3 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.5 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.6 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of services not required by the Contract Documents are not included in the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Both subparagraphs below severely restrict Contractor's markup for overhead and profit. Delete these requirements if the Supplementary Conditions contain these or similar restrictions. To stipulate maximum amounts for indirect expenses, see AIA Document A503, "Guide for Supplementary Conditions," for suggested modifications to AIA Document A201.
2. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
3. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. One: Lump-Sum Allowance - Include the sum of fifty-thousand ($50,000.00) dollars for third-party construction phase testing and inspection.

END OF SECTION - 01 2100

SECTION 01 2200
UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:
   1. Section 01 2600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   2. Section 01 4000 "Quality Requirements" for general testing and inspecting requirements.

1.2 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

A. Summary of Unit Prices: Enter each Unit Price at the indicated location on the Bid Form provided, or otherwise to the Construction Manager as directed.
   1. UNIT PRICE 1: Rock
      a. Provide a Unit Price per cubic yard for rock fill provided, either addition or deduction.

   2. UNIT PRICE 2: Masonry Repointing and Reconstruction:
      a. Provide a Unit Price per square yard for Masonry Repointing and Reconstruction per specification section 04 9000.

END OF SECTION 01 2200

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUBSTITUTION PROCEDURES

A. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A.
2. Submit requests within 20 days after the Notice of Award.
3. Identify product to be replaced and show compliance with requirements for substitutions. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified, a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.

C. Architect will review proposed substitutions and notify Contractor of their acceptance or rejection by Change Order. If necessary, Architect will request additional information or documentation for evaluation.

1. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

D. Do not submit unapproved substitutions on Shop Drawings or other submittals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2500

SECTION 01 2600
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 CONTRACT MODIFICATION PROCEDURES

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions." [**.**]

B. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work.
   1. Proposal Requests are not instructions either to stop work in progress or to execute the proposed change.
   2. Within 15 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time.

C. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

D. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701, for all changes to the Contract Sum or the Contract Time.

E. Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

F. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2600

SECTION 01 2900
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 01 2600 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Division 01 3200 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.2 DEFINITIONS

A. Schedule of Values: Contractor will provide the schedule of values based upon statements furnished by the Sub Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing the Sub Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

   a. Application for Payment forms with Continuation Sheets.
   b. Submittals Schedule.
   c. Contractor's Construction Schedule.

2. Contractor shall submit the Schedule of Values to Architect at earliest possible date but no later than 5 days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

   a. Project name and location.
   b. Name of Architect.

c. Architect's project number.
d. Contractor’s name and address.
e. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheets.
3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name and address of Construction Manager.
    d. Change Orders (numbers) that affect value.
    e. Dollar value (limit dollar values of activities to $100,000 or less, without Construction Manager’s approval).

        1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
    b. Refer to Supplementary Conditions 007300 regarding off-site stored materials.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Contractor and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: Sub Contractor progress payments shall be submitted to Contractor by the 20th of the month. The period covered by each Application for Payment is one month, ending on the 20th of the month.

C. Payment Application Forms: Use payment application forms provided by the Contractor. Copies of payment application forms are available from the Contractor upon request.

D. Application Preparation: Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Sub Contractor. Contractor will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Contractor by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic’s lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.

3. Contractor’s Construction Schedule.
4. Products list.
5. Submittals Schedule.
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.
13. Data needed to acquire Owner's insurance.
14. Initial settlement survey and damage report if required.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2900

PART 1 - GENERAL

1.1 PROJECT MANAGEMENT AND COORDINATION

A. Subcontract List: Submit a written summary identifying individuals or firms proposed for each portion of the Work. Use CSI Form 1.5A.

B. Key Personnel Names: Within 15 Insert number days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. List e-mail addresses and telephone numbers.

C. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.

D. Requests for Information (RFIs): On discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI. Use AIA Document G716 or forms acceptable to Architect and Owner.

E. Project Web Site: Use Architect's Project Web site for purposes of hosting and managing project communication and documentation until Final Completion.
   1. Contractor, subcontractors, and other parties granted access by Contractor to Project Web site shall execute a data licensing agreement in the form of AIA Document C106.

F. Schedule and conduct progress meetings at Project site at regular intervals. Notify Owner and Architect of meeting dates and times. Require attendance of each subcontractor or other entity concerned with current progress or involved in planning, coordination, or performance of future activities.
   1. Record minutes and distribute to everyone concerned, including Owner and Architect.

1.2 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
   1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
      a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
      b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.

B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

2. Submit three copies of each action submittal. Architect will return two copies.
3. Submit two copies of each informational submittal. Architect will not return copies.
4. Architect will return submittals, without review, received from sources other than Contractor.

C. Paper Submittals: Place a permanent label or title block on each submittal for identification. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect. Include the following information on the label:
1. Project name.
2. Date.
3. Name and address of Contractor.
4. Name and address of subcontractor or supplier.
5. Number and title of appropriate Specification Section.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with unique identifier, including project identifier, Specification Section number, and revision identifier.
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.

E. Identify options requiring selection by Architect.

F. Identify deviations from the Contract Documents on submittals.

G. Contractor's Construction Schedule Submittal Procedure:
1. Submit required submittals in the following format:
   a. Working electronic copy of schedule file, where indicated.
   b. PDF electronic file.
   c. Two paper copies.
2. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
   a. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
3. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections.
   1. Post electronic submittals as PDF electronic files directly to Architect's FTP site specifically established for Project.
      a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   2. Submit electronic submittals via email as PDF electronic files.
      a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2.2 ACTION SUBMITTALS

A. Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.

B. Product Data: Mark each copy to show applicable products and options. Include the following:
   1. Manufacturer's written recommendations, product specifications, and installation instructions.
   2. Wiring diagrams showing factory-installed wiring.
   3. Printed performance curves and operational range diagrams.
   4. Testing by recognized testing agency.
   5. Compliance with specified standards and requirements.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submit on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Include the following:
   1. Dimensions and identification of products.
   2. Fabrication and installation drawings and roughing-in and setting diagrams.
   3. Wiring diagrams showing field-installed wiring.
   4. Notation of coordination requirements.
   5. Notation of dimensions established by field measurement.

D. Samples: Submit Samples for review of kind, color, pattern, and texture and for a comparison of these characteristics between submittal and actual component as delivered and installed. Include name of manufacturer and product name on label.
   1. If variation is inherent in material or product, submit at least three sets of paired units that show variations.

2.3 INFORMATIONAL SUBMITTALS

A. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.

B. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

2.4 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

2.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type schedule within 30 days of date established for the Notice of Award.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

C. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

D. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and indicate date by which recovery will be accomplished.

PART 3 - EXECUTION

3.1 SUBMITTAL REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Architect will review each action submittal, make marks to indicate corrections or modifications required, will stamp each submittal with an action stamp, and will mark stamp appropriately to indicate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

3.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribute copies of approved schedule to Owner, Architect, subcontractors, testing and inspecting agencies, and parties identified by Contractor with a need-to-know schedule responsibility. When revisions are made, distribute updated schedules to the same parties.

END OF SECTION 01 3000

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Section 01 2900 "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Section 01 3100 "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Section 01 3200 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Section 01 4000 "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
5. Section 01 7700 "Closeout Procedures" for submitting warranties.
6. Section 01 7839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Section 01 7823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Section 01 7900 "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Divisions 02 through 49 Sections for specific requirements for submittals in those Sections.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's and Contractor's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect through Contractor for Sub Contractor's use in preparing submittals. Submittals consisting of Architect's drawings will be rejected. Provide submittals in electronic PDF format with Submittal Transmittal in Word for Windows version 2007 (Word) to Architect for review.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Contractor and Architect reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Section 01 3200 "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Contractor will advise Sub Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 days for initial review of each submittal.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4-inches wide the full page height beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name and address of Contractor.
    e. Name and address of Sub Contractor.
    f. Name and address of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by the submittal number of that section (e.g. 1.4) followed by a number 0 for the first submittal. Revisions would follow in sequence – e.g. 095113.1.4.0 is first submittal, 09 5113.1.4.1 is first revision.

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

4. Electronic PDF submittal files shall be named utilizing the specification number followed by a sequential number for the submittal made under the given specification number followed by "r#" if it is a re-submittal, and then followed by a brief description of the submitted item.

    a. The description shall indicate the actual item submitted, shall not be general in nature, and does not have to be that of the specification section heading.

b. Using the example, “230519-4r2 Differential Pressure Gauge”; 23 0519 – Meters and Gages for HVAC Piping is the relevant specification, the “4” shows it was the fourth submittal for specification section 23 0519 – Meters and Gages for HVAC Piping, “r2” shows it was the second re-submittal, and the description indicates what item is submitted.
c. Each specification item shall be submitted in a separate PDF file. PDF files with multiple specification items will be returned without review.
d. Each file shall have sufficient space allowance for the Architects review stamp(s).
e. Each file shall have the Contractor’s review stamp(s) and indicate information required by paragraph Submittal Procedures - 01 3300, paragraph 1.4, E.3., this Section.”

5. All marks made by the Contractor shall be in green.

F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one electronic copy in PDF format of each submittal to concurrent reviewer in addition to Contractor and Architect.
2. Copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, discard submittals received from sources other than Construction Manager.

1. Transmittal Form: Provide locations on form for the following information:

a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Specification Section number and title.
i. Drawing number and detail references, as appropriate.
j. Transmittal number, numbered consecutively.
k. Submittal and transmittal distribution record.
l. Remarks.
m. Signature of transmitter.

2. On an attached separate sheet, prepared on Construction Manager’s letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
3. Include Construction Manager’s certification stating that information submitted complies with requirements of the Contract Documents.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision via clouds or other distinguishing feature.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

1.4 CONSTRUCTION MANAGER'S USE OF ARCHITECT'S CAD FILES

A. General: At Construction Manager 's written request, copies of Architect's CAD files will be provided for Contractor's use in connection with Project.

1. Not Used.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit electronic PDF format of each submittal. Architect will review and mark up in red as required and return to the Construction Manager the same PDF marked up.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.
    f. Wiring diagrams showing factory-installed wiring.
    g. Printed performance curves.
    h. Operational range diagrams.
    i. Mill reports.
    j. Standard product operation and maintenance manuals.
    k. Compliance with specified referenced standards.
    l. Testing by recognized testing agency.
    m. Application of testing agency labels and seals.
    n. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit electronic PDF format of Product Data, unless otherwise indicated. Architect, through Construction Manager, will return reviewed submittal. Mark up and retain a returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    f. Shopwork manufacturing instructions.
    g. Templates and patterns.
    h. Schedules.
    i. Design calculations.
    j. Compliance with specified standards.
    k. Notation of coordination requirements.
    l. Notation of dimensions established by field measurement.
    m. Relationship to adjoining construction clearly indicated.
    n. Seal and signature of professional engineer if specified.
    o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit one electronic copy in PDF format of each submittal to Construction Manager. Architect, through Construction Manager, will return one copy.
4. Number of Copies: Submit one electronic copy in PDF format where copies are required for operation and maintenance manuals. Trade Contractor will incorporate drawings into project record documents, refer 017839, 1.3, markup and retain one returned copy as a project record drawing.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed. Comply with all sample requirements as indicated in individual specification sections.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of appropriate Specification Section.
    e. Area for architectural stamp.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of the Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit four full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Contractor, will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit four sets of Samples. Architect and Construction Manager will retain two Sample sets; two will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least five sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Number of Copies: Submit product schedule or list in PDF format, unless otherwise indicated. Architect, through Construction Manager, will return reviewed schedule.

   a. Mark up and retain one returned copy as a Project Record Document.

F. Construction Manager's Construction Schedule: Comply with requirements specified in Section 01 3200 "Construction Progress Documentation" for Construction Manager's action.

G. Submittals Schedule: Comply with requirements specified in Section 01 3200 "Construction Progress Documentation."

H. Application for Payment: Comply with requirements specified in Section 01 2900 "Payment Procedures."

I. Schedule of Values: Comply with requirements specified in Section 01 2900 "Payment Procedures."

J. Subcontract List: Contractor shall prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit subcontractor list in electronic PDF format.
    a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit in PDF format Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit one electronic copy in PDF format of each submittal. Architect will review and mark up as required in red and return to the Contractor the same PDF marked up.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Section 01 4000 "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Section 01 3100 "Project Management and Coordination."

C. Contractor’s Construction Schedule: Comply with requirements specified in Section 01 3200 "Construction Progress Documentation."

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

M. Schedule of Tests and Inspections: Comply with requirements specified in Section 01 4000 "Quality Requirements."

N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

O. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Section 01 7823 "Operation and Maintenance Data."

R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

S. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

V. Material Safety Data Sheets (MSDSs): Submit information to Construction Manager.

2.3 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Trade Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit one electronic copy in PDF format of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONSTRUCTION MANAGER'S REVIEW

A. Construction Manager shall review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Construction Manager's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

A. General: Architect will not review submittals that do not bear Construction Manager's approval stamp and will return them without action.

B. Action Submittals: Construction Manager and Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: When the Architect marks a submittal “No Exception Taken”, the Work covered by the submittal pay proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
2. Final-But-Restricted Release: When the Architect marks a submittal “Make Corrections Noted”, the Work covered by the submittal may proceed provided it complies with the notations or corrections on the submittal and requirements of the Contract Documents.
3. Returned for Re-submittal: When the Architect marks a submittal “Revise and Resubmit”, do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

C. Informational Submittals: Contractor and Architect will review each submittal and will return it “Action Not Required”, or will return it without stamp if it does not comply with requirements.

D. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 3300

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

B. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Architect for a decision.

C. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum. The actual installation may exceed the minimum within reasonable limits. Indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision.

D. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
   1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
   2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

E. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

F. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, notices, receipts for fee payments, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

G. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

H. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility.
   1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
      a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

I. Testing Agency Qualifications: An independent agency with the experience and capability to conduct testing and inspecting indicated; and where required by authorities having jurisdiction, that is acceptable to authorities.

J. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

K. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect and Contractor of irregularities or deficiencies in the Work observed during performance of its services.
   2. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
   3. Do not perform any duties of Contractor.

L. Associated Services: Cooperate with testing agencies and provide reasonable auxiliary services as requested. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Security and protection for samples and for testing and inspecting equipment.

M. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

N. Special Tests and Inspections: Engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction.

O. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4000

SECTION 01 4200
REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. A current list of industry and association addresses and telephone numbers is available from the Architect's office.

1.3 ABBREVIATIONS AND ACRONYMS

A. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials (See ICC)
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)
ICC	International Code Council
ICC-ES	ICC Evaluation Service, Inc.

B. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

CE	Army Corps of Engineers
CPSC	Consumer Product Safety Commission
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
GSA	General Services Administration
HUD	Department of Housing and Urban Development
LBL	Lawrence Berkeley National Laboratory

NCHRP	National Cooperative Highway Research Program (See TRB)
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety & Health Administration
RUS	Rural Utilities Service (See USDA)
TRB	Transportation Research Board
USDA	Department of Agriculture
USPS	Postal Service

C. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 4200

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Use Charges: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated.

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

C. Accessible Temporary Egress: Comply with applicable provisions in ICC A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts and top and bottom rails.

2.2 TEMPORARY FACILITIES

A. Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

C. Heating: Provide temporary heating required for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

D. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

3.2 SUPPORT FACILITIES INSTALLATION

A. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

E. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

H. Install and maintain temporary fire-protection facilities. Comply with NFPA 241.

3.4 MOISTURE AND MOLD CONTROL

A. Before installation of weather barriers, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
   1. Protect stored and installed material from flowing or standing water.
   2. Remove standing water from decks.
   3. Keep deck openings covered or dammed.

B. After installation of weather barriers but before full enclosure and conditioning of building, protect as follows:
   1. Do not load or install drywall or porous materials into partially enclosed building.
   2. Discard water-damaged material.
   3. Do not install material that is wet.
   4. Discard, replace, or clean stored or installed material that begins to grow mold.
   5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.

C. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period.

END OF SECTION 01 5000

SECTION 01 5700
SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Installation of temporary and permanent erosion control systems.

B. Installation of temporary and permanent slope protection systems.

1.3 RELATED SECTIONS AND DOCUMENTS

A. Section 31 0000 “Earthwork”.

B. Section 32 9219 “Seeding”.

C. Section 32 9223 “Sodding”.

D. Storm Water Pollution Prevention Plan (SWPPP).

E. Construction Drawings.

F. Applicable Local, State, and Federal specifications or requirements.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Protect adjacent properties and water resources from erosion and sediment damage throughout life of contract.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Quick growing grasses; wheat, rye, or oats in accordance with Sections labeled “Seeding” and “Sodding”.

B. Fencing for siltation control as specified on Construction Drawings.

C. Bale stakes for each bale shall be minimum of 4-feet in length and shall be either two #2 rebars, two steel pickets, or two 2-inch x 2-inch hardwood stakes driven 1'-6" into ground.

D. Temporary mulches such as loose hay, straw, netting, wood cellulose, or agricultural silage.

E. Fence stakes shall be minimum of 5-ft in length and be either metal stakes or 2-inch x 2-inch hardwood stakes driven 1'-6" into ground.

F. Temporary and Permanent Outfall Structures as specified on Construction Drawings.

PART 3 - EXECUTION

3.1 PREPARATION

A. Review Construction Drawings and Storm Water Pollution Prevention Plan.

B. Deficiencies or changes on Construction Drawings or Storm Water Pollution Prevention Plan as it is applied to current conditions shall be brought to the attention of Owner for remedial action.

3.2 EROSION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

A. Place erosion control systems in accordance with Construction Drawings and Storm Water Pollution Prevention Plan or as may be dictated by site conditions in order to maintain the intent of the specifications and permits at no additional cost to Owner.

B. Engineer has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls. Permanently seed and mulch cut slopes as excavation proceeds to extent considered desirable and practical.

C. Maintain temporary erosion control systems as directed by Engineer or governing authorities to control siltation during life of contract. Contractor shall respond to maintenance or additional work ordered by Engineer or governing authorities within 48 hours or sooner if required.

D. Slopes that erode easily or that will not be graded for a period of 14 days or more shall be temporarily seeded as work progresses with wheat, rye, or oats application in accordance with Section labeled “Landscaping” unless otherwise specified on the Construction Drawings.

END OF SECTION 01 5700

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced.
   1. Show compliance with requirements for comparable product requests.
   2. Architect will review the proposed product and notify Contractor of its acceptance or rejection.

C. Basis-of-Design Product Specification Submittal: Show compliance with requirements.

D. Compatibility of Options: If Contractor is given option of selecting between two or more products, select product compatible with products previously selected.

E. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
   4. Store materials in a manner that will not endanger Project structure.
   5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   6. Protect stored products from damage and liquids from freezinarranties specified in other Sections shall be in addition to, and run concurrent with, other warranties

required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. Provide products that comply with the Contract Documents, are undamaged, and, unless otherwise indicated, are new at the time of installation.
   1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
   2. Where products are accompanied by the term "as selected," Architect will make selection.
   3. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Where the following headings are used to list products or manufacturers, the Contractor's options for product selection are as follows:
   1. Products:
      a. Where requirements include "one of the following," provide one of the products listed that complies with requirements.
      b. Where requirements do not include "one of the following," provide one of the products listed that complies with requirements or a comparable product.
   2. Manufacturers:
      a. Where requirements include "one of the following," provide a product that complies with requirements by one of the listed manufacturers.
      b. Where requirements do not include "one of the following," provide a product that complies with requirements by one of the listed manufacturers or another manufacturer.
   3. Basis-of-Design Product: Provide the product named, or indicated on the Drawings, or a comparable product by one of the listed manufacturers.

C. Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

D. Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Architect will consider Contractor's request for comparable product when the following conditions are satisfied:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications.
3. List of similar installations for completed projects, if requested.
4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 6000

SECTION – 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for preparing or executing the following:
   1. Execution requirements.
   2. Substantial and Final Completion procedures.
   3. Preparing closeout Submittals including Record Drawings, Record Specifications, Record Project Data and Miscellaneous Submittals, Project Warranties.
   4. Requirements for Field Engineering, installation, and cutting and patching.
   5. Project cleaning.
   6. Repair of the Work.
   7. Demonstration and Training.

B. Related Sections:
   1. Section 017823 “Operation and Maintenance Data” for preparing emergency, maintenance, and materials data manuals.

1.2 EXECUTION REQUIREMENTS

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

B. Cutting and Patching:
   1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching.
   2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
   3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.3 CLOSEOUT SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

B. Certified List of Incomplete Items: Final submittal at Final Completion.

C. Operation and Maintenance Data: Submit one copy of manual.

D. PDF Electronic File: Assemble manual into a composite electronically indexed file. Submit on digital media.

E. Record Drawings: Submit two sets of marked-up record prints.

F. Record Digital Data Files: Submit data file and one set(s) of plots.

G. Record Product Data: Submit one paper copy and one annotated PDF electronic files and directories of each submittal.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.

B. Submittals Prior to Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
   1. Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other sections, including project record documents, operation and maintenance manuals, property surveys, similar final record information, warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   3. Submit maintenance material submittals specified in other sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect.
   4. Submit test/adjust/balance records.
   5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
   1. Advise Owner of pending insurance changeover requirements.
   2. Make final changeover of permanent locks and deliver keys to Owner.
   3. Complete startup and testing of systems and equipment.
   4. Perform preventive maintenance on equipment used prior to Substantial Completion.
   5. Advise Owner of changeover in heat and other utilities.
   6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
   7. Remove temporary facilities and controls.
   8. Complete final cleaning requirements, including touchup painting.
   9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will proceed with inspection or advise Contractor of unfulfilled

requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1.5 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment.
   2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved.
   3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit pest-control final inspection report.

B. Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare final Certificate for Payment after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

PART 2 - PRODUCTS

2.1 MATERIALS

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

2.2 RECORD DRAWINGS

A. Record Prints: Maintain a set of prints of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued. Record data as soon as possible after obtaining it. Mark with erasable, red-colored pencil to show actual installation where installation varies from that shown originally, and mark with other colors to show subsequent changes at same location. Accurately record information in an acceptable drawing technique.
   1. Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location, along with Project name, and names of Architect and Contractor(s).

2. Information on concealed elements that would be difficult to identify or measure and record later.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings.
   1. Format: Annotated PDF electronic file.

2.3 RECORD SPECIFICATIONS

A. Mark Specifications to indicate the actual product installation where installation varies from that originally indicated in Specifications, addenda, and contract modifications. Especially note the following:
   1. Information on concealed products and installations that cannot be readily identified and recorded later.
   2. The proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. The name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.4 RECORD PRODUCT DATA AND MISCELLANEOUS SUBMITTALS

A. Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal. Especially note the following:
   1. Information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Related Change Orders, record Specifications, and record Drawings where applicable.

B. Assemble Miscellaneous Records required by other Sections for record keeping and submittal in connection with actual performance of the Work. Bind or file and identify each, ready for continued use and reference.

C. Format: Annotated PDF electronic file, or scanned PDF electronic file(s) of marked-up paper copy of Product Data.

2.5 PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty and bond documents into an orderly sequence based on the Project Manual Table of Contents.

1. Bind in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, sized to receive 8-1/2-by-11-inch paper, identified with the typed or printed title "WARRANTIES," Project name, and name of Contractor on the binder's front and spine
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty and to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Warranty Electronic File: Scan warranties and bonds and assemble into a single indexed electronic PDF file. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

B. Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance.
1. Verify compatibility with and suitability of substrates.
2. Examine roughing-in for mechanical and electrical systems.
3. Examine walls, floors, and roofs for suitable conditions.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Take field measurements as required to fit the Work properly. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication.

E. Verify space requirements and dimensions of items shown diagrammatically on Drawings.

F. Surface and Substrate Preparation: Comply with manufacturer's written recommendations for preparation of substrates to receive subsequent work.

3.2 CONSTRUCTION LAYOUT AND FIELD ENGINEERING

A. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks.

B. Engage a registered land surveyor to lay out the Work using accepted surveying practices.

C. Engage a registered land surveyor to prepare a final property survey showing significant features (real property) for Project.
   1. At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
   3. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations.

C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

D. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed.

E. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

G. Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

A. Provide temporary support of work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Cutting: Cut in-place construction using methods least likely to damage elements retained or adjoining construction.
   1. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

D. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
   1. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will minimize evidence of patching and refinishing.
   2. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance.
   3. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3.5 CLEANING

A. Clean Project site and work areas daily, including common areas. Dispose of materials lawfully.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
   3. Remove debris from concealed spaces before enclosing the space.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion:
   1. Clean Project site, yard, and grounds, in areas disturbed by construction activities. Sweep paved areas; remove stains, spills, and foreign deposits. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   2. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
   3. Remove labels that are not permanent.
   4. Clean transparent materials, including mirrors. Remove excess glazing compounds.
   5. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances. Sweep concrete floors broom clean.
   6. Vacuum carpeted surfaces and wax resilient flooring where product is so indicated.
   7. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and foreign substances. Clean plumbing fixtures. Clean light fixtures, lamps, globes, and reflectors.
   8. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

3.6 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction, including replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Provide replacements where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that

cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
2. Replace burned-out or noticeably dimmed bulbs, and defective and noisy starters.

3.7 SUBMITTALS AND RECORD DOCUMENTS

A. Submittals: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

3.8 DEMONSTRATION AND TRAINING

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

1. Include instruction for basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

END OF SECTION 01 7000

SECTION - 01 7413
PROGRESS CLEANING

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. This Section includes:
1. Cleaning requirements during construction operations.
2. Final cleaning prior to turning the project over to the Owner.

1.2 QUALITY ASUSRANCE

A. Coordinate with Section 01 57 19.13 – Environmental Management.

B. Coordinate with Section 10 81 50 – Integrated Pest Management (IPM) and the approved IPM plan.
1. Contractor shall provide progress cleaning that minimizes .

C. Utilize non-toxic cleaning materials and methods.

1. Provide cleaners that bear either a Green Seal Certification Label and/or a U.S. EPA Design for the Environment (DfE) label.

2. Comply with GS 37 for general purpose cleaning and bathroom cleaning.

3. Biobased content:
a. General Purpose Household Cleaners: Products designed to clean multiple common household surfaces. This designated item does not include products that are formulated for use as disinfectants. Task-specific cleaning products, such as spot and stain removers, upholstery cleaners, bathroom cleaners, glass cleaners, etc., are not included in this item. Provide minimum 39% biobased content.
b. Industrial Cleaners: Products, including solvents, used to remove contaminants, such as adhesives, inks, paint, dirt, soil, and grease, from parts, products, tools, machinery, equipment, vessels, floors, walls, and other production-related work areas. Task-specific cleaners used in industrial settings, such as parts wash solutions, are not included in this definition. Provide minimum 41% biobased content.
c. Multipurpose Cleaners: Products used to clean dirt, grease, and grime from a variety of items in both industrial and domestic settings. This designated item does not include products that are formulated for use as disinfectants. Provide minimum 56% biobased content.
d. Glass Cleaners: Cleaning products designed specifically for use in cleaning glass surfaces, such as windows, mirrors, car windows, and computer monitors. Provide minimum 49% biobased content.
e. Adhesive and Mastic Removers: Solvent products formulated for use in removing asbestos, carpet, and tile mastics as well as adhesive materials, including glue, tape, and gum, from various surface types. Provide minimum 58% biobased content.
f. Carpet and Upholstery Cleaners
1) General Purpose: Cleaning products formulated specifically for

use in cleaning carpets and upholstery, through a dry or wet process, found in locations such as houses, cars, and workplaces. Carpet and upholstery cleaners formulated for use in cleaning large areas such as the carpet in an entire room or the upholstery on an entire piece of furniture. Provide minimum 54% biobased content.

2) Spot Removers: Cleaning products formulated specifically for use in cleaning carpets and upholstery, through a dry or wet process, found in locations such as houses, cars, and workplaces. Carpet and upholstery cleaners formulated for use in removing spots or stains in a small, confined area. Provide minimum 7% biobased content.

4. Use natural cleaning materials where feasible. Natural cleaning materials include:
   a. abrasive cleaners: substitute 1/2 lemon dipped in borax.
   b. ammonia: substitute vinegar, salt and water mixture, or baking soda and water.
   c. disinfectants: substitute 1/2 cup borax in gallon water.
   d. drain cleaners: substitute 1/4 cup baking soda and 1/4 cup vinegar in boiling water.
   e. upholstery cleaners: substitute dry cornstarch.

1.3 FINAL CLEANING

A. At completion of Work, remove all remaining waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces; leave Project clean and ready for occupancy.
   1. After review of trees to remain by Architect and Owner, remove tree tags.
   2. Provide final cleaning in accordance with ASTM E1971 and the approved IPM plan.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Section 01 2900 "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Section 01 7300 "Execution" for progress cleaning of Project site.
3. Section 01 7823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
4. Section 01 7839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 01 7900 "Demonstration and Training" for requirements for instructing Owner's personnel.
6. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Contractor/Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit one digital and one printed copy of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

1.5 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor and Construction Manager.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Refer to 01 7413 Progress Cleaning.

B. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

C. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

D. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

E. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 7700

SECTION - 01 7823
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes and systems and equipment.

B. Related Sections include the following:

1. Section 01 3300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Section 01 7700 "Closeout Procedures" for submitting operation and maintenance manuals.
3. Section 01 7839 "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
4. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 SUBMITTALS

A. The Contractor shall receive from the Sub Contractors manuals, documents, and lists as stipulated in Section 017823 in the quantities required. It shall be the Contractor's responsibility to organize the Operation and Maintenance Data in their final form and submit for the Architect's review and approval.

B. Initial Submittal: Submit 1 draft copy of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

C. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. The architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 4 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.4 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
   b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in

manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.

8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 7823

SECTION - 01 7839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Section 01 7823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
2. Divisions 02 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal: Submit one electronic copy in PDF format. Architect will initial and date each print and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return marked up set for organizing into sets, printing, binding, and final submittal.
b. Final Submittal: Submit one electronic copy in PDF format and (1) set of marked-up Record Drawings. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Product Data: Submit copies of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an understandable drawing technique.
    c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations below first floor.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Architect and Contractor for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect and Construction Manager.
    e. Name of Trade Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project. Contractor, at their option, may review project record documents prior to accepting any payment request. Contractor may reject payment request will record documents are correct.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Contractor's reference during normal working hours.

END OF SECTION 01 7839

SECTION - 01 7900
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 4000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Preconstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project record documents.
    e. Identification systems.
    f. Warranties and bonds.

g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.

5. Adjustments: Include the following:

   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:

   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.

f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 7823 "Operation and Maintenance Data."

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video Recording Format: Provide high-quality color video recordings with menu navigation in format acceptable to Architect.

C. Narration: Describe scenes on video recording by audio narration by microphone while dubbing audio narration or off-site after video recording is recorded. Include description of items being viewed.

D. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 01 7900

SECTION 01 8913
SITE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Cleaning site of debris, grass, trees, and other plant life in preparation for site or building earthwork.

B. Protection of existing structures, trees, or vegetation indicated on the Construction Drawings to remain.

C. Stripping topsoil from areas that are to be incorporated into limits of project and where so indicated on Construction Drawings.

1.3 RELATED SECTIONS

A. Section 310000 “Earthwork”.

B. Section 015700 “Slope Protection and Erosion Control”.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Construct temporary erosion control systems as shown on Drawings or as directed by "Storm Water Pollution Prevention Plan" (SWPPP) to protect adjacent properties and water resources from erosion and sedimentation.

B. In event that sitework on this project will disturb one (1) or more acres, Contractor shall not begin construction without "National Pollution Discharge Elimination System" (NPDES) permit governing discharge of storm water from site for entire construction period. NPDES permit requires SWPPP to be in place during construction.

C. The Contractor shall be fully responsible for the preparation of the “Storm Water Pollution Prevention Plan” unless the Owner or the Engineer has supplied one to them. The Erosion Control Plan within the Drawings shall only be used as a guide and is not intended to be a fully developed “Storm Water Pollution Prevention Plan”.

D. Contractor shall be totally responsible for conducting storm water management practices in accordance with NPDES permit and for enforcement action taken or

imposed by Federal or State agencies, including cost of fines, construction delays, and remedial actions resulting from Contractor's failure to comply with provisions of NPDES permit.

1.5 PROJECT CONDITIONS

A. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practical.

B. Variations to conditions or discrepancy in actual conditions as they apply to site preparation operations are to be brought to attention of the Engineer prior to commencement of sitework.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 - EXECUTION

3.1 PREPARATION

A. Identify existing plant life that is to remain and verify clearing limits are clearly tagged, identified, and marked in such manner as to ensure their safety throughout construction operations.

3.2 PROTECTION

A. Locate and identify existing utilities that are to remain and protect these from damage.

B. Protect trees, plant growth, and features designated to remain.

C. Conduct operations with minimum interference to public or private accesses and facilities. Maintain ingress and egress at all times and clean or sweep roadways daily as required by SWPPP or governing authority. Dust control shall be provided with equipment provided by Contractor.

D. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

E. Provide traffic control as required, in accordance with the US Department of Transportation's "Manual on Uniform Traffic Control Devices" and applicable state highway department requirements.

3.3 CLEARING

A. Clear areas required for access to site and execution of work.

B. Unless otherwise indicated on Construction Drawings, remove trees, shrubs, grass, other vegetation, improvements, or obstructions interfering with installation of new construction. Removal includes digging out stumps and roots. Depressions caused by clearing and grubbing operations are to be filled to subgrade elevation to avoid ponding of water. Satisfactory fill material shall be placed in accordance with Section labeled “Earthwork”.

C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to state laws and regulations.

3.4 TOPSOIL EXCAVATION

A. Topsoil shall consist of organic superficial soil found in depth of not less than 6-inches. Satisfactory topsoil shall be reasonably free of subsoil, clay lumps, stones and other objects over 2-inches in diameter, weeds, roots, and other objectionable material.

B. Cut heavy growths of grass from areas before stripping and remove cuttings with remainder of cleared vegetative material.

C. Strip topsoil from areas that are to be filled, excavated, landscaped, or re-graded to such depth that it prevents intermingling with underlying subsoil or questionable material.

D. Stockpile topsoil in storage piles in areas shown on Drawings or where directed by Engineer. Construct storage piles to freely drain surface water. Cover storage piles as required to prevent windblown dust. Dispose of unsuitable topsoil as specified for waste material.

END OF SECTION 01 8913

SECTION 03 3300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings, piers, and pier caps.
2. Foundation walls.
3. Slabs-on-grade.
4. Elevated slabs.
5. Concrete toppings.

B. Related Sections include the following:

1. Division 31 Section "Drilled Concrete Piers and Shafts" for concrete for concrete piers and shafts.
2. Division 32 Section "Concrete Paving" for concrete pavement and walks.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Samples: For waterstops and vapor retarder.

E. Qualification Data: For installer, manufacturer and testing agency.

F. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

G. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Fiber reinforcement.
6. Waterstops.
7. Curing compounds.
8. Floor and slab treatments.
9. Bonding agents.
10. Adhesives.
11. Vapor retarders.
12. Semi-rigid joint filler.
13. Joint-filler strips.
14. Repair materials.

H. Floor surface flatness and levelness measurements to determine compliance with specified tolerances.

I. Field quality-control test and inspection reports.

J. Minutes of pre-installation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

G. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, and concrete protection.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.

b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.

c. Structural 1, B-B or better; mill oiled and edge sealed.

d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

F. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

G. Form-Release Agent: Commercially formulated form-release agent containing VOC's less than 250 grams per liter that will not bond with stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

H. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Zinc Repair Material: ASTM A 780, zinc-based solder, paint containing zinc dust, or sprayed zinc.

C. Bar Supports: Use only concrete bricks as supports under rebars (regular rebar chairs not permitted)

2.5 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/II gray. Supplement with the following:

a. Fly Ash: ASTM C 618, Class C or F.

b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inch nominal for foundations, stem walls and slabs on grade; 1 inch nominal for elevated slabs.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C330, ¾-inch nominal maximum aggregate size.

D. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.7 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

1. Available Products:

a. Colloid Environmental Technologies Company; Volclay Waterstop-RX.

b. Concrete Sealants Inc.; Conseal CS-231.

c. Greenstreak; Swellstop.

d. Henry Company, Sealants Division; Hydro-Flex.

e. JP Specialties, Inc.; Earthshield Type 20.

f. Progress Unlimited, Inc.; Superstop.

g. TCMiraDRI; Mirastop.

2.8 VAPOR BARRIERS

A. Plastic Vapor Retarder: ASTM E 1745, Class A vapor retarder with minimum WVTR of 0.008 as tested by ASTM E96 and permeance as tested after mandatory conditioning (ASTM E 154 sections 8,11,12,13) less than 0.01 Perms. Include manufacturer's recommended adhesive or pressure-sensitive tape (minimum width of tape shall be 4 inches). Construct pipe boots from vapor retarder material and pressure sensitive tape per manufacturer’s recommendations.

1. Available Products:

a. Stego Wrap (15 mil) Vapor Barrier by Stego Industries

b. Ecoshield-E (15 mil) Epro

c. Iron Barr (15 mil) Flatiron Films

B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

2.9 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.10 FLOOR AND SLAB TREATMENTS

A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces. Apply only to areas scheduled for ‘sealed concrete’ floor finish. Refer to drawings for location. Protect slab from discoloration prior to applying floor treatment. Clean slab as recommended by floor treatment manufacturer if necessary prior to floor treatment application.

1. Products:

a. ChemMasters; Chemsil Plus.

b. ChemTec International; ChemTec One.

c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Intraseal.

d. Curecrete Distribution Inc.; Ashford Formula.

e. Dayton Superior Corporation; Day-Chem Sure Hard.

f. Euclid Chemical Company (The); Euco Diamond Hard.

g. Kaufman Products, Inc.; SureHard.

h. L&M Construction Chemicals, Inc.; Seal Hard.

i. SpecChem; SpecHard.

2.11 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

D. Reglets: Fabricate reglets of not less than 0.0217-inch- thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

E. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.12 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.13 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
   1. Fly Ash: 20 percent.
   2. Combined Fly Ash and Pozzolan: 25 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.14 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Proportion normal-weight concrete mixture for Footings and Piers and Grade Beams as follows:
   1. Minimum Compressive Strength: 3500 psi at 28 days or as shown on drawings.
   2. Maximum Water-Cementitious Materials Ratio: 0.55.
   3. Minimum Cementitious Materials Content: 540 lb/cu. yd.
   4. Slump Limit: 4” for footings and grade beams, plus or minus 1 inch.
   5. Air Content: 4-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

B. Proportion normal-weight concrete mixture for Slabs-on-Grade as follows:
   1. Minimum Compressive Strength: 3500 psi at 28 days or as shown on drawings.
   2. Maximum Water-Cementitious Materials Ratio: 0.55.

3. Minimum Cementitious Materials Content: 610 lb/cu. yd.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of troweled finished slabs to exceed 3 percent.

C. Proportion normal-weight concrete mixture for foundation walls and pilasters as follows:
1. Minimum Compressive Strength: 5000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45
3. Minimum Cementitious Materials Content: 610 lb/cu. yd.
4. Slump Limit: 3 inches, plus or minus 1 inch.
1. Air Content: 4-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

D. Proportion normal-weight concrete mixture for elevated slabs on metal decking as follows:
1. Minimum Compressive Strength: 3000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.40.
3. Minimum Cementitious Materials Content: 610 lb/cu. yd.
4. Slump Limit: 3 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
6. If required, Fibrous Concrete Reinforcement shall be added at the concrete batch plant and mixed according to the manufacturer's written instructions. Reference Contract Drawings for dosage rates.

2.15 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
1. Weld reinforcing bars according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: See drawings for locations. Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

H. After a rain event, the contractor must delay concrete placement for slabs on grade until the subgrade is dry. The contractor may use commercial air blowers to remove accumulated water.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.

1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings or to receive mortar setting beds for ceramic or quarry tile, Portland cement terrazzo, and other bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated, to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces to be exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish surfaces to the following tolerances, according to ASTM E 1155 for a randomly trafficked floor surface:

a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.

b. Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 31; and of levelness, F(L) 24; for slab-on-grade in atrium lobby.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated or where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least **six** months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, pop-outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections, sample materials and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.

2. Steel reinforcement welding.

3. Headed bolts and studs, hooked anchor bolts and other embedded steel anchors

4. Monitor addition of water to concrete at job site and length of time concrete is allowed to remain in truck during pour.

5. Certify each delivery ticket indicating class of concrete delivered (or poured), amount of water added and time at which cement and aggregate were discharged into truck, and time at which concrete was discharged from truck.

6. Verification of use of required design mixture.

7. Concrete placement, including conveying and depositing.

8. Curing procedures and maintenance of curing temperature.

9. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Contractors Responsibilities:

1. Furnish necessary labor to assist testing agency in obtaining and handling samples at job-site.

2. Advise testing agency in advance of operations to allow for assignment of testing personnel and testing.
3. Provide and maintain for use of testing agency adequate facilities for proper curing of concrete test specimens on project site in accordance with ASTM C31

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. but less than 25 cu. yd. plus one set for each additional 75 cu. yd. or fraction thereof.
    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Test to be taken from sample at point of discharge from hose. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete: one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.
    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive

strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi

10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Concrete for which strength tests do not meet criteria for acceptance shall be considered inadequate until proven otherwise.
12. Completed concrete work will be accepted when the requirements of ACI 301, Chapter 18 have been complied with.
13. In any case, where strength tests of concrete fail to meet criteria specified herein, Architect shall be sole judge of structural adequacy of concrete. In such case, burden of proof of structural adequacy shall be responsibility of Contractor. Strength evaluation shall conform to requirements of ACI 318. If strength evaluation testing indicates, in opinion of Architect, that structure is of inadequate strength; portions of structure in question shall be repaired or removed and replaced as directed by Architect at no additional expense to Owner. If strength tests fall below specified strength, but not so low as to cause concern for structural adequacy, Architect may request improved conditions of curing or modification of design mixes to improve strength.
14. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
15. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
16. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
17. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION

SECTION 03 3013
CONCRETE TREATMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Concrete sealer, or concrete curing and sealing compounds.

B. Related Sections include the following:

1. Section 03 3000 "Cast-in-Place Concrete.".

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Delivery materials to Project site n manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep containers sealed until ready for use. Keep from freezing.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not apply sealer when concrete or air temperatures are below 40 deg F.

PART 2 - PRODUCTS

2.1 CONCRETE SEALER

A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.

1. "Cure and Seal 309 J-18," Dayton-Superior Corporation.
3. "Dress & Seal WB 25," L&M Construction Chemicals, Inc.

B. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive concrete sealers. Surfaces must be free of standing water, and clean and dry. Notify Architect if surfaces are not acceptable.

1. Begin surface preparations only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Prepare concrete surfaces in accordance with manufacturer's written recommendations and instructions.

B. New Concrete: Cure concrete in accordance with manufacturer's instructions, and as specified in Section 032800 "Cast-In-Place Concrete."

C. Existing Cured or Aged Concrete: Should contractor elect to let concrete cure and delay installation of concrete treatments, ensure surfaces are clean, dry, and free of coatings and contaminants.

1. Thoroughly clean aged concrete by pressure washing with strong alkaline detergent to remove dirt, waxes, oils, and similar buildup.

3.3 APPLICATION OF WATER-BASED TRANSPARENT CONCRETE STAIN

A. Comply with the following installation procedures for concrete stain:

1. Do not apply stains when substrate or ambient air temperatures are lower than 50 deg F or higher than 100 deg F and relative humidity is greater than 85 percent or when temperatures are expected to exceed either maximum within 72 hours after application.
2. Cover and protect adjacent finished and unfinished surfaces with plastic sheeting during mixing and application.
3. Apply stain mixture with a high-volume, low-pressure sprayer (not a hand sprayer) or brush. Apply evenly over the prepared surface in a random or circular motion.
4. Apply additional coat(s) if concrete is very porous, or to achieve desired coloration and density. Apply until rejection of material by substrate, which is observable by material appearing to remain wet for longer than 1 minute.
5. Do not allow material to puddle and dry on the surface or in joints. Redistribute or wipe up excess material with clean cloths while material is still wet.
6. Do not walk on dry stained surface for 8 hours after final application. Protect surface from water or other liquids for 36 hours.
7. Seal cured stained surfaces with sealer recommended and approved by stain manufacturer soon after stain has dried in order to prevent damage or discoloration by other construction operations or foot traffic, typically with 24 to 48 hours.
   Do not apply sealer if the tested moisture vapor emission rate is in excess of 3.75 lb./1000 sq. ft. per 24 hours.

3.3 APPLICATION OF CONCRETE SEALERS

A. Apply concrete sealers to concrete surfaces in accordance with manufacturer's written instructions.

B. Application of Sealer Coat: Uniformly apply a continuous sealing compound to concrete, either hardened or untreated, by power spray or roller according to manufacturer's written recommendations. Spraying may be by hand held "pump up" sprayer or airless industrial sprayer. Use short-napped solvent-resistant sleeve when applying by roller.

C. Apply one coat to troweled surfaces. Apply two coats if concrete surface is porous or worn.

3.5 PROTECTION

A. Protect horizontal surfaces from traffic and incidental damage until sealer has cured.

END OF SECTION 03 3013

SECTION 042200
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:

1. Concrete masonry units.
2. Mortar and grout.
3. Reinforcing steel.
4. Masonry joint reinforcement.
5. Ties and anchors.
6. Miscellaneous masonry accessories.

B. Products furnished, but not installed, under this Section include the following:

1. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 5 Section "Structural Steel."

C. Products installed, but not furnished, under this Section include the following:

1. Hollow-metal frames in unit masonry openings, furnished under Division 8 Section "Steel Doors and Frames."

1.3 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 SUBMITTALS

A. Product Data: For each different masonry unit, accessory, and other manufactured product specified.

B. Shop Drawings: Show fabrication and installation details for the following:

1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement"

C. Samples for Initial Selection: For the following:

1. Unit masonry Samples in small-scale form showing the full range of colors and textures available for each different exposed masonry unit required.
2. Colored mortar Samples showing the full range of colors available.

D. Samples for Verification: For the following:

1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:

1. Each type of masonry unit required.
2. Mortar complying with property requirements of ASTM C 270.
3. Grout mixes complying with compressive strength requirements of ASTM C 476. Include description of type and proportions of grout ingredients.

F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Each type of masonry unit required.
2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
3. Each material and grade indicated for reinforcing bars.
4. Each type and size of joint reinforcement.
5. Each type and size of anchor, tie, and metal accessory.

G. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

D. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

1. Protect Type I concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

D. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.

1. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with a wind velocity greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. General: Provide shapes indicated and as follows:

1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners, unless indicated as bullnose.
3. Provide double square-edged units for acoustic construction.

B. Concrete Masonry Units: ASTM C 90 and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi (13.1 Mpa)
2. Weight Classification: Normal weight, unless otherwise indicated.
3. Provide Type II, nonmoisture-controlled units.
4. Size (Width): Manufactured to the following dimensions:

    a. 4 inches (102 mm) nominal; 3-5/8 inches (92 mm) actual.
    b. 8 inches (203 mm) nominal; 7-5/8 inches (194 mm) actual.
    c. 12 inches (305 mm) nominal; 11-5/8 inches (295 mm) actual.

5. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

    a. Where units are to be left exposed, provide color and texture matching the range represented by Architect's sample.
6. Basis of Design Manufacturer: Echekon, An Oldcastle Company.
    a. Adress: 3 Glenlake Pkwy, FL 12, Atlanta, GA 30328.
    b. Phone: *44-495-8211
    c. Trendstone Plus – Kaleidoscope.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Cement: ASTM C 1329.

D. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

1. White-Mortar Aggregates: Natural white sand or ground white stone.

E. Aggregate for Grout: ASTM C 404.

F. Water: Potable.

G. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Mortar Cement:

a. Magnolia Superbond Mortar Cement ; Blue Circle Cement.
b. Lafarge Mortar Cement; Lafarge Corporation.

2. Cold-Weather Admixture:

a. Accelguard 80; Euclid Chemical Co.
b. Morseled; W. R. Grace & Co., Construction Products Division.
c. Trimix-NCA; Sonneborn, Div. of ChemRex, Inc.

2.3 REINFORCING STEEL

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; ASTM A 616/A 616M, including Supplement 1; or ASTM A 617/A 617M, Grade 60 (Grade 400).

2.4 MASONRY JOINT REINFORCEMENT

A. General: ASTM A 951 and as follows:

1. Mill galvanized, carbon-steel wire for interior walls.
2. Hot-dip galvanized, carbon-steel wire for interior walls.
3. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
4. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
5. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units where indicated.

B. For single-wythe masonry, provide ladder type with single pair of side rods and cross rods spaced not more than 16 inches (407 mm) o.c.

2.5 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.

B. Mill Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 641 (ASTM A 641M), Class 1 coating.

C. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.

D. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.6 ADJUSTABLE ANCHORS FOR CONNECTING TO STEEL FRAME

A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section: Crimped 1/4-inch- (6.4-mm-) diameter, hot-dip galvanized steel wire anchor section for welding to steel. Mill galvanized wire may be used at interior walls where humidity does not exceed 75 percent.
2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.25-inch- (6.4-mm-) diameter, hot-dip galvanized steel wire. Mill galvanized wire may be used at interior walls where humidity does not exceed 75 percent.

2.7 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:

1. Headed bolts.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.

B. Preformed Control-Joint Gaskets: Material as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

1. Styrene-Butadiene-Rubber Compound: ASTM D 2000, Designation M2AA-805.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch (3.6-mm) steel wire, hot-dip galvanized after fabrication.

1. Provide units with either two loops or four loops as needed for number of bars indicated.

E. Available Products: Subject to compliance with requirements, cavity drainage materials that may be incorporated into the Work include, but are not limited to, the following:

1. Reinforcing Bar Positioners:

a. D/A 811; Dur-O-Wal, Inc.
b. D/A 816; Dur-O-Wal, Inc.
c. No. 376 Rebar Positioner; Heckman Building Products, Inc.
d. #RB Rebar Positioner; Hohmann & Barnard, Inc.
e. #RB-Twin Rebar Positioner; Hohmann & Barnard, Inc.

f. Double O-Ring Rebar Positioner; Masonry Reinforcing Corporation of America.
g. O-Ring Rebar Positioner; Masonry Reinforcing Corporation of America.

2.9 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup (0.14-L) dry measure tetrasodium polyphosphate and 1/2-cup (0.14-L) dry measure laundry detergent dissolved in 1 gal. (4 L) of water.

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.

1. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
2. For reinforced masonry and where indicated, use Type S.

C. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 10 inches (200 to 254 mm) as measured according to ASTM C 143.

2.11 SOURCE QUALITY CONTROL

A. Contractor will engage a qualified independent testing agency to perform source quality-control testing indicated below:

1. Payment for these services will be made by Owner.
2. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

B. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Verify that foundations are within tolerances specified.
2. Verify that reinforcing dowels are properly placed.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

B. At acoustically significant cavity walls, do not allow rigid metal ties, mortar, debris, or structure of any kind to physically tie the two walls together.

C. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

D. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

E. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

F. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

3.3 CONSTRUCTION TOLERANCES

A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:

B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.

C. Maximum allowable variation in all planes is 1/4 inch in 10 feet (6 mm in 3 m) maximum.

D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.

E. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch (102-mm) horizontal face dimensions at corners or jambs.

1. One-half running bond with vertical joint in each course centered on units in courses above and below.

C. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.

E. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.

F. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.

1. Install compressible acoustical filler in joint between top of partition and underside of structure above.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.

C. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.6 MASONRY JOINT REINFORCEMENT

A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

1. Space reinforcement not more than 16 inches (406 mm) o.c. above finished floor or 8 inches (203 mm) o.c. below finished floor.

a. Reinforcement above is in addition to continuous reinforcement.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:

1. Provide an open space not less than 1 inch (25 mm) in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.8 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake joints in exposed faces.

3.9 LINTELS

A. Provide masonry lintels where shown and where openings of more than 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.

1. Provide built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Temporarily support built-in-place lintels until cured.

3.10 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.

1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 and the drawings for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.11 FIELD QUALITY CONTROL

A. Contractor will engage a qualified independent testing agency to perform field quality-control testing indicated below.

1. Payment for these services will be made by Owner.
2. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

B. Testing Frequency: Tests and Evaluations listed in this Article will be performed during construction for each 5000 sq. ft. (465 sq. m) of wall area or portion thereof.

C. Mortar properties will be tested per ASTM C 780.

D. Grout will be sampled and tested for compressive strength per ASTM C 1019.

E. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

3.12 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.

END OF SECTION

PART 1 – GENERAL

1.1 Summary

A. Section Includes

1. Removal of joint sealant in all exterior masonry joints.
2. Removal of all prior Portland cement replacement mortar, including pointing and reconstruction.
3. Careful salvaging and cleaning of historic materials.
4. Raking out of all unsound mortar from all exterior stone and brick joints.
5. Removal of mortar excess from stone faces.
6. Repointing of all exterior stone.

1.2 References

A. American Society for Testing and Materials

1. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM C141 – Standard Specification for Hydraulic Lime for Structural Purposes.
3. ASTM C144 – Standard Specification – Aggregate for Masonry Mortar.

1.3 Performance Requirements

A. Product Data:

1. Natural Hydraulic Lime: Product Data Sheets.
2. Aggregate: Sieve Analysis

1.4 Quality Assurance

A. Perform Work in accordance with Manufacturer's Instructions

B. Masons:

1. Raking, repointing, removal, material salvage, and finishing operations shall be performed by

craftspersons who are familiar with historic lime mortar formulations, curing conditions and performance characteristics. Contractor shall provide proof of such knowledge.

2. Only skilled journeymen masons who are familiar and experienced with the materials and methods specified and are familiar with the design requirements shall be used for masonry restoration.

1.5 Qualifications

A. Installer: Company specializing in performing plaster/stucco work with minimum of three (3) years experience.

1.6 Mock-up

A. Construct mock-ups of the following:

1. Repair and replacement of brick bond courses with shallow (up to 1 – 1/2" deep) repointing or deep (exceeding 1 – 1/2" or multiple lifts) repointing.
2. Retain approved mock-ups in undisturbed condition, suitable indentified, during restoration as a standard for judging completed work.

B. Approvals

1. Approved samples and mock-ups shall remain as part of a permanent work.

2. Obtain approval of raking out and surface preparation before finishing joints.

1.7 Delivery, Storage, and Handling

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging.

B. Protect restoration materials during storage and construction from adverse conditions.

1.8 Project Conditions

A. Do not perform any masonry application unless air temperatures are between 40 degrees Fahrenheit and 85 degrees Fahrenheit and will remain so for at least 48 hours after completion of work or provide proper protection.

B. Provide sun, wind, and rain protection.

PART 2 – PRODUCTS

2.1 Mortar Materials

2.2 Components

A. Mortar Materials

1. Binder: Natural Hydraulic Lime NHL.

2. Aggregate: Natural or Manufactured Sharp Sand with at least 4 grades forming a substantial part of the sand and no more than 3% of particles smaller than grade #200 (0.075mm).

2.3 Tools and Accessories

A. Shims: Hard Plastic; removable; size and shape as required for temporary support of stone.

B. Chisels: Carbide-tipped stone carving chisels.

1. Hand Chisels

2. Barre _" type B short stroke pneumatic carving tool.

C. Pointing Irons: Width slightly less than joint width. Various widths required to suit project conditions.

D. Brushes of various sizes for cleaning raked-out joints.

E. Garden sprayer, water hose, and shop-type vacuum for cleaning raked-out joints.

F. Hand water mister bottle and garden sprayer for curing, cleaning, and finishing pointed joints.

G. Grinders:

1. Blade width limited to 1/16".

2. Equip grinders with source extraction vacuum units to contain dust]

H. Mortar Injectors: For full-depth pointing, if Contractor so elects, Contractor will be permitted to use powered injection equipment of suitable design, providing that Contractor demonstrates that joints can be completely filled and compacted to the same degree as accomplished by hand placement of mortar by conventional methods. Where mortar injectors are employed, the final 5/8" shall be placed by hand.

I. Mixing Equipment: Standard paddle mixer for mixing mortar.

J. Other tools as necessary for the Work.

2.4 Mortar Mixes

A. NHL Mix Design

1. 1 part NHL and parts of sand, proportioned by volume. Mortar should be mixed for at least 10 minutes. Greater workability and better mortar performance is achieved with
less water and longer mixing. (Mortars can be left to stand and fatten up for up to 1-3 hours depending on the mix; and tempered before use.) Mortar can be reworked up to 8 hours after mixing.
2. Casein Lime Grout:

1. Mix NHL Mortar as described in 2.4 A. 1.

PART 3 – EXECUTION

3.1 Examination

A. Examine conditions, with installer present, for compliance with requirements for installation tolerances and other specific conditions affecting performance of unit masonry.
B. Do not proceed until unsatisfactory conditions have been corrected.

C. Before removing any deteriorated work, establish bonding patterns, levels, and coursings.

3.2 Protection

A. Prevent repointing mortar from staining the face of the masonry or other surfaces to be left exposed.

Remove repointing mortar that comes in contact with such surfaces.

B. Cover partially completed work when work is not in progress.

C. Protect sills, ledges, and projections from droppings.

3.3 Temporary Support

A. Provide temporary support where necessary to prevent displacement of stone during repointing and until mortar has achieved sufficient strength.

3.4 Removing Anchors

A. Remove and discard anchors, nails, pins, and similar devices.

B. Remove ferrous material completely. Do not allow portions to remain embedded.

C. Point hole with mortar.

3.5 Removing Joint Sealant from Joints

A. Cut out joint sealant with a caulking cutter (Fein tool) assisted by hand tools.
B. Trim joint sealant from joint faces.

C. Grind remaining sealant from joint faces without appreciably widening joint width or altering appearance of units. Leave edges of units square and perpendicular to exposed face of unit. Do not round of edges of units
D. Vigorously scrub joint faces with a stiff brush to remove embedded dust and debris from jointfaces, followed by vacuuming, working from top to bottom of wall.
E. Remove existing underlying mortar to the depth specified prior to repointing.]

3.6 Removing Existing Mortar

A. Existing horizontal mortar joints (bed joints) that are pointed with a Portland cement mortar may be raked out

by a skilled mason by carefully scoring the center of the mortar joint with a rotary grinder to relieve the stress on the joint. The remaining mortar in head and bed joints shall e removed to the required depth using hard or pneumatic stone carving chisels or by hand. Do not grind the mortar from the face of the joints.

B. Vertical joints (head joints) shall not be raked out using a grinder. All vertical head joints must be removed by hand in brickwork.

C. All joints shall be raked back to sound, solid, back up material. Raking out shall leave a clean, square face at the back of the joint to provide for maximum contact of pointing mortar with the masonry back up mortar. Shallow or feather edging will not be permitted.

D. Existing historic lime-based mortar shall be removed using only small-headed hand or pneumatic stone carving chisels that are no wider than half the width of the existing masonry joints.

E. Do not widen the existing masonry joints. Do not spall or chip the surrounding masonry edges in the process of mortar removal. Damage to surrounding brick or stone resulting from rotary blade over running shall not be permitted. Contractor shall replace brick or stone damaged during mortar removal with replacement units that match the original as determined by the Architect.

F. Brush joint faces and vacuum debris from joint to remove dirt and loose debris, working from top to bottom of wall.

3.7 Mortar Removal Depth

A. Existing mortar joints shall be raked out to a whichever depth is greatest: 1. 5/8 inch.
   2. 2-1/2 times the width of the existing mortar joint.
   3. The depth necessary to remove previously pointed Portland cement mortar.
   4. Until bonded, cohesive existing lime mortar is encountered.

3.8 Full Depth Pointing

A. Provide temporary support where necessary to prevent displacement of brick or stone during repointing and until mortar has achieved sufficient strength.

B. Where required to maintain support of units, rake out and repoint each unit in stages, allowing freshly repointed portions to cure sufficiently before raking out and repointing remaining portion of joints supporting the unit.

C. Remove temporary shims and supports when no longer necessary, and repoint voids left by temporary shims and supports.

3.9 Prewetting

A. Brush joint faces and flush out joints with water to remove dirt and loose debris, working from top to bottom of wall. Rinse stone joints with water to remove dust and mortar particles. Thoroughly wet wall below to avoid soiling. Joint surfaces should be damp but free from standing water.

B. Prior wetting is necessary to achieve the proper absorption rate before masonry repair commences and is essential to good masonry practice. Presoak walls and joints with water as required by project and weather conditions. During hot or windy weather, wet walls and joints several times in advance of pointing. Re-wet walls and joints yet to be pointed if masonry dries out before pointing. Masonry units shall be damp but without standing water at the time of pointing.

C. Maintain hand mister bottles or a garden sprayer with clean, clear, potable water immediately available to

masons at all times duringthe repointing process. A very low pressure spray (garden hose with nozzle adjusted to a fine, low-volume mist) may be used over large areas providing erosion of joints is prevented.

D. Exposed surface of masonry adjacent to joint shall be wet prior to repointing.

3.10 Repointing of Mortar Joints

A. Joints shall be pointed in layers or “lifts” where the joints are deeper than ¾ inch.

1. Joints greater than 3/4 inches deep shall be pointed with an initial lift to bring the joint depth to a uniform 3/4 inches deep.
2. Compact each layer at the time it is placed in the joint by applying firm pressure with thepointing tool.
3. Allow each lift to become thumbprint hard before applying the next lift.

B. Finish joints uniformly. Do not overwork. Leave the surface of the masonry clean.

3.11 Grouting with Casein Lime Mortar

A. Control of absorption rate is critical for flowing material. Thoroughly pre-wet cavity with water.

B. Casein mortar can be injected with a grout pump or poured in place as project conditions permit.

C. Form a dam with either pointing mortar at the face of the joint or cavity, or use a backer rod to be removed after the casein mortar firms up. Insure that area of grout is contained.

D. Inject or pour mortar and, if backer rod used, remove backer rod when mortar is firm. Proceed with repointing if necessary.

3.12 Cleaning

A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.

B. With a trowel, strike off minior dabs of adherent mortar from face of masonry.

C. Remove minor mortar marks from masonry by misting with water and brushing with a small, stiff-bristle brush.

3.13 Curing

A. Keep mortar from drying out too quickly.

B. Mist walls with water as required by project and weather conditions to insure slow curing of the lime mortar.

C. Shield from direct sun and drying winds for the first 48 hours after installation.

END OF SECTION

SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes structural steel and grout.

1.2 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 PERFORMANCE REQUIREMENTS

A. Connections: Fabricator to design connections not designed or fully detailed on Contract Documents. Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Load and Resistance Factor Design," Volume 2, Part 9 or AISC's "Manual of Steel Construction, Allowable Stress Design," Part 4.
2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components.

C. Qualification Data: For Installer, fabricator and testing agency.

D. Welding certificates.

E. Mill test reports for structural steel, including chemical and physical properties.

F. Source quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Not less than 10 years of experience in erection of structural steel for projects of similar size and complexity.

B. Fabricator Qualifications: Not less than 10 years of experience in erection of structural steel for projects of similar size and complexity.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.

3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M (Grade 50).

B. Channels and Angles: ASTM A 36/A 36M.

C. Plate and Bar: ASTM A 36/A 36M.

D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.

F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: Unless noted otherwise on Contract Documents, ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers. Plain finish.

B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers, plain.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

D. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

E. Un-headed Anchor Rods: ASTM F 1554, Grade as indicated on Contract Documents

F. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 heavy hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436 hardened carbon steel.
4. Finish: Plain unless noted otherwise on the Contract Documents.

G. Threaded Rods: ASTM A 36/A 36M.

1. Nuts: ASTM A 563 heavy hex carbon steel.
2. Washers: ASTM F 436 hardened carbon steel.
3. Finish: Plain unless noted otherwise on the Contract Documents.

H. Eye Bolts and Nuts: ASTM A 108, Grade 1030, cold-finished carbon steel.

I. Sleeve Nuts: ASTM A 108, Grade 1018, cold-finished carbon steel.

2.3 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.4 GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.6 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
   1. Fill vent holes and grind smooth after galvanizing
   2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
   1. Liquid Penetrant Inspection: ASTM E 165.
   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   3. Ultrasonic Inspection: ASTM E 164.
   4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Weld plate washers to top of baseplate.
   3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.

4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.

b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.

c. Ultrasonic Inspection: ASTM E 164.

d. Radiographic Inspection: ASTM E 94.

D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION

SECTION 05 3100
STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Composite floor deck.

B. Related Sections include the following:

1. Division 03 Section "Cast-in-Place Concrete" for concrete fill.
2. Division 05 Section "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Division 09 painting Sections for repair painting of primed deck.

1.3 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

C. Product Certificates: For each type of steel deck, signed by product manufacturer.

D. Welding certificates.

E. Field quality-control test and inspection reports.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.

G. Research/Evaluation Reports: For steel deck.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM E 329 for testing indicated.

B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

C. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.

D. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

E. Electrical Raceway Units: Provide UL-labeled cellular floor-deck units complying with UL 209 and listed in UL's "Electrical Construction Equipment Directory" for use with standard header ducts and outlets for electrical distribution systems.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

C. Do not overload deck during construction by workmen or storage of materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Deck:
   a. Consolidated Systems, Inc.
   b. Epic Metals Corporation.
   c. Marlyn Steel Decks, Inc.
   d. New Millennium Building Systems, LLC.
   e. Nucor Corp.; Vulcraft Division.
   f. Roof Deck, Inc.
   g. United Steel Deck, Inc.
   h. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.2 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 50, G60 zinc coating.
2. Profile Depth: As indicated on Contract Drawings.
3. Design Uncoated-Steel Thickness: As indicated on Contract Drawings.

4. Retain span used in design from "Span Condition" Subparagraph below.

5. Span Condition: Triple span or more.

2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

E. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 30 for overhang and slab depth or as indicated on the Contract Documents.

F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.

G. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 thick, with factory-punched hole of 3/8-inch minimum diameter.

I. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch wide flanges and recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.

J. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

K. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

L. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 INSTALLATION, GENERAL

A. Do not proceed with installation until all unsatisfactory existing conditions are corrected. Commencement of installation implies acceptance of existing conditions.

B. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.

C. Install temporary shoring before placing deck panels, if required to meet deflection limitations.

D. Locate deck bundles to prevent overloading of supporting members.

E. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

F. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

G. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

H. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

I. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

J. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.4 FLOOR-DECK INSTALLATION

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 5/8 inch, nominal.
2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
3. Weld Spacing: Space and locate welds as indicated on Contract Documents.
4. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, as indicated on Contract Documents at intervals not exceeding the lesser of half of the span or 36 inches (applying whichever option requires more fasteners), and as

follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

F. Install piercing hanger tabs at 14 inches apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides, unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.6 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Division 09 Painting.

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 5013
METAL LADDERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal ladders.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Metal ladders.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance of Aluminum Ladders: Aluminum ladders**,** including landings, shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F ambient; 180 deg F, material surfaces

2.2 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Aluminum Extrusions: ASTM B 221 Alloy 6063-T6.

C. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.

D. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.

C. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.

2.5 METAL LADDERS

A. General:

1. Comply with ANSI A14.3, unless otherwise indicated.
2. Space siderails 16 inches apart, unless otherwise indicated.
3. Support each ladder at top and bottom and not more than 60 inches (1500 mm) o.c. with welded or bolted brackets, made from same metal as ladder.

B. Manufacturers: Aluminum Ladders:

1. O'Keeffe's Inc.

C. Aluminum Ladders: Fabricate of open-type construction with extruded structural-aluminum channel or plate stringers, and extruded square or rectangular aluminum serrated or ribbed rungs. Provide wall brackets and fittings for installation. Do not support ladders on finished roofing membrane or extend through membrane to roof deck unless indicated in Drawings, and provide with alternate off-floor brackets at base of ladder. Verify height of ladder run above finished roofing.

1. Type 1: Straight Ladders: Provide straight aluminum ladders where indicted.

    a. Available Product: O'Keeffe's, Inc., Series 500 "Standard Duty Channel Rail Fixed Access Ladder."

        1) Siderails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches (64 mm) deep, 3/4 inch (19 mm) wide, and 1/8 inch (3.2 mm) thick.
        2) Rungs: Extruded-aluminum tubes, not less than 3/4 inch (19 mm) deep and not less than 1/8 inch (3.2 mm) thick, with ribbed tread surfaces.
        3) Fit rungs in centerline of siderails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.
        4) Finish: Mill finish.

2. Type 2: Parapet Ladder: Provide straight aluminum roof ladder with platform and return where indicated.

    a. Available Product: O'Keeffe's, Inc., Series 503 "Tubular Rail Low Parapet Access Ladder with Platform and Return

        1) Siderails: Continuous extruded-aluminum tubes, not less than 2-1/2 inches (64 mm) deep, 3/4 inch (19 mm) wide, and 1/8 inch (3.2 mm) thick, or as standard with manufacturer.
        2) Rungs: Extruded-aluminum tubes, not less than 3/4 inch (19 mm) deep and not less than 1/8 inch (3.2 mm) thick, with ribbed tread surfaces.
        3) Fit rungs in centerline of siderails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.
        4) Finish: Mill finish.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

B. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

END OF SECTION 05 5013

SECTION 05 5113
METAL PAN STAIRS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Preassembled steel stairs with concrete-filled and abrasive-coating-finished, formed-metal treads.
2. Steel tube railings attached to metal stairs.
3. Steel tube handrails attached to walls adjacent to metal stairs.
4. Railing gates at the level of exit discharge.

B. Related Requirements:

1. Section 033000 – Cast-in-Place Concrete
2. Section 051200 – Structural Steel Framing

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so that they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.

1.4 ACTION SUBMITTALS

A. Product Data: For metal pan stairs.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

C. Delegated-Design Submittal: For metal fabrications with loading requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineers.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

D. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code - Steel."

2. AWS D1.3, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal fabrications with loading requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs and railings.

B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Uniform Load: 100 lbf/sq. ft.

2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..

3. Uniform and concentrated loads need not be assumed to act concurrently.

4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.

5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.

C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ft. applied in any direction.

b. Concentrated load of 200 lbf applied in any direction.

c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..

b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36.

C. Steel Tubing: ASTM A 500 (cold formed).

D. Cast Iron: Either gray iron, ASTM A 48, or malleable iron, ASTM A 47, unless otherwise indicated.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be galvanized.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.5 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding unless otherwise indicated.

2. Use connections that maintain structural value of joined pieces.

B. Preassembled Stairs: Assemble stairs in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. Weld exposed corners and seams continuously unless otherwise indicated.

5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

2.7 STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," Commercial Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers of steel plates or channels.

a. Provide closures for exposed ends of channel stringers.

2. Construct platforms of steel plate or channel headers and miscellaneous framing members as needed to comply with performance requirements indicated.

3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.

4. Where stairs are enclosed by gypsum board shaft-wall assemblies, provide hanger rods or struts to support landings from floor construction above or below. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.

5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.

1. Steel Sheet: Uncoated cold-rolled steel sheet unless otherwise indicated.

2. Steel Sheet: Galvanized-steel sheet, where indicated.

3. Directly weld metal pans to stringers; locate welds on top of subtreads where they are concealed by concrete fill. Do not weld risers to stringers.

4. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.

5. Shape metal pans to include nosing integral with riser.

6. Attach abrasive nosings to risers.

7. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.

8. Provide epoxy-resin-filled treads, reinforced with glass fibers, with slip-resistant, abrasive surface.

9. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

2.8 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153 for steel and iron hardware and with ASTM A 123 for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLING METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.

G. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."

3.2 INSTALLING RAILINGS

A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:

1. Anchor posts to steel by welding or bolting to steel supporting members.

2. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with postinstalled anchors and bolts.

B. Attach handrails to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as required to comply with performance requirements.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION - 06 1053
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood blocking and nailers.
2. Wood furring.
3. Utility shelving.
4. Plywood backing panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood nailers, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

C. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

D. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking.
2. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Utility shelving.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.

C. For utility shelving, provide lumber with 15 percent maximum moisture content of eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or No. 2 Common (Sterling) grade; NeLMA, NLGA, WCLIB, or WWPA.

D. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Eastern softwoods, No. 2 Common grade; NELMA.
3. Northern species, No. 2 Common grade; NLGA.
4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.

2.5 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Power-Driven Fasteners: NES NER-272.

C. Screws for Fastening to Metal Framing: ASTM C 954, length as recommended by screw manufacturer for material being fastened.

2.7 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Self-adhesive rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit.

B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

G. Kerf back of concealed board nailers and blocking to prevent warping and cupping.

1. Provide 3/8 - inch deep, single-blade-width kerf cuts for each size board as follows:

a. 2x4: two.
b. 2x6, 2x8: three.
c. 2x10, 2x12: four.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 1053

SECTION 06 4116
PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

1. Section Includes:

    1. Plastic-laminate-faced architectural cabinets.
    2. Cabinet hardware.
    3. Standard-use plastic-laminate-clad countertops.
    4. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

2. Related Sections:

    1. Division 01 Section "Sustainable Design Requirements-LEEDv4" **for** general requirements and procedures for compliance with certain prerequisites and credits needed for Project to obtain "LEED Version 4 for Building Design and Construction" (LEED v4 BD+C) Silver certification based on USGBC's LEED v4 BD+C (Schools).

    2. Division 06 Section “Simulated Stone Surfaces” for solid-surfacing agglomerate material countertops and window stools.

1.2 ACTION SUBMITTALS

1. Product Data: For each type of product high-pressure decorative laminate and cabinet hardware and accessories.

2. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

3. Samples:

    1. Plastic laminates, for each color, pattern, and surface finish.
    2. Thermoset decorative panels, for each color, pattern, and surface finish.

4. LEED Submittals:
    1. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
    2. Laboratory Test Reports: For composite wood products, indicating compliance with requirements for low-emitting materials.

1.3 QUALITY ASSURANCE

1. Do not obtain material required for fabrication until Architect has approved mockups, initial samples for selection, and samples for verification.

2. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.4 FIELD CONDITIONS

1. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

1. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

2. Grade: Custom.

3. Type of Construction: Frameless.

4. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

5. Reveal Dimension: 1/4 inch.

6. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.

    1. Manufacturers: Subject to compliance with requirements, provide the product(s) listed in the Finish Legend and Room Finish Schedule.

7. Laminate Cladding for Exposed Surfaces:

    1. Balanced construction is mandatory.
    2. Horizontal Surfaces: Grade HGS.
    3. Horizontal Surfaces Other Than Tops: Grade HGS.
    4. Vertical Surfaces: Grade VGS.
    5. Cabinet Doors, Inside and Outside, unless otherwise noted: Grade VGS.
    6. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

8. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
2. Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding, where unitized drawer systems are not indicated.
3. Drawer Bottoms: Thermoset decorative panels.
4. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

9. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As indicated by laminate manufacturer's designations.
2. Match Architect's sample.
3. As selected by Architect from laminate manufacturer's full range and indicated in the Finish Legend.

10. Edges of Plastic-Laminate Clad Doors, Drawer Fronts, Shelves: PVC tape, 3-mm thickness, matching laminate in color, pattern, and finish. Doellken-Woodtape PVC Edgebanding.

2.2 WOOD MATERIALS

1. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 8 to 13 percent.

2. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.

    a. Grade M-2-Exterior Glue (Marine Grade), for countertops at and withing 24 inches of sinks and lavatories.

2. Particleboard: Not permitted.
3. Softwood Plywood: DOC PS 1, medium-density overlay.
4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.
5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 CABINET HARDWARE AND ACCESSORIES

1. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087111 "Door Hardware (Descriptive Specification)."

2. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch- thick metal, and as follows:

    1. Semiconcealed Hinges for Overlay Doors: BHMA A156.9, B01521.

3. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 100 degrees of opening.

4. Back-Mounted Pulls: BHMA A156.9, B02011.

5. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.

6. Adjustable Shelf Standards and Supports:

    1. BHMA A156.9, B04071; with shelf rests, B04081
    2. BHMA A156.9, B04102; with shelf brackets, B04112.

7. Shelf Rests: BHMA A156.9, B04013; [metal] [plastic] [metal, two-pin type with shelf hold-down clip].

8. Drawer Slides: BHMA A156.9.

    1. Manufactured Unitized Drawer System: Blum: “Metabox.” Version C15. Series 330, or approved alternate product: Full Extension plus 3/4 inch (18 mm) override. Available Heights: Select slide height best suited to height of drawer box indicated on Drawings.

        a. Type N: 2-1/8 inches (54 mm).
        b. Type M: 3-5/8 inches (86 mm).
        c. Type K: 4-5/8 inches (118 mm).
        d. Type H: 5-7/8 inches (150 mm).
        e. Do not use manufactured unitized drawer system on drawer boxes exceeding 8 inches high, on lateral file drawers, or for box drawers of any depth exceeding 24 inches wide.
        f. Limited to drawers not exceeding 100 lbf applied static load or 75 lbf applied dynamic load.

9. Door Locks: BHMA A156.11, E07121.

10. Drawer Locks: BHMA A156.11, E07041.

11. Door and Drawer Silencers: BHMA A156.16, L03011.

12. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Aluminum,
2. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
3. Bright Chromium Plated: BHMA 625 for brass or bronze base; BHMA 651 for steel base.
4. Satin Stainless Steel: BHMA 630.

13. Countertop Grommets- Countertop Wire Management: Minimum 3-inch OD, black, molded-plastic, ABS or styrene grommets and matching plastic caps with slot for wire passage:

1. Doug Mockett & Company, Inc.: Series MM5-21.

14. Countertop Support Braces: Prefinished, stamped metal bracket leg, tapered leg, with 3 by 3 inch by 45-degree notch for cleat and wireway; Finish: black powder coat, unless otherwise indicated. For tops up to 25 inches deep: Minimum 400 pound capacity per pair:

1. Basis of Design: Iron Support Standard front mount 2 ½" wide x ½" thick three holes mounting.
2. A&M Hardware, Inc., "Work Station Brackets": 18 inches by 24 inches (LLV)
3. Doug Mockett & Co. "Large Basic Work Surface Support," Model SWS4. 18-1/4 inches by 24-1/4 inches (LLV).
4. TMI Systems: Model A7453.

15. CH: Coat/Robe hook.

1. Basis of design manufacturer and series: Elements Transitional 3" Wide Double Prong Ceiling / Under Cabinet Robe Bath Utility Hook.

16. CPU Holder: Basis of Design: SAFCO ERGO Comfort – Mount Under Counter.

2.4 PLASTIC-LAMINATE COUNTERTOPS

1. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.

2. Grade: Custom or better.

3. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or as indicated in the Finish Legend:

a. Wilsonart International; Div. of Premark International, Inc.

4. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

    1. As indicated in the Room Finish Schedule and Finish Legend, or .as selected by Architect from manufacturer's full range in the following categories:

5. Edge Treatment: As indicated on Drawings and in Finish Legend, one of the following

6. Self-Edges Laminate: Same as laminate cladding on horizontal surfaces.

    1. Plastic Laminate Edge: HDPL HGS. Hot contact cement. Match color of countertop laminate, unless otherwise indicated in Finish Schedule. 3-mm PVC edging.

7. Core Material: Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.

    1. Core Material at Sinks: Grade M-2-Exterior Glue (Marine Grade), for countertops at and within 24 inches of sinks and lavatories.
    2. 3/4 inch for standard countertops. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top

8. Paper Backing: Provide paper backing on underside of countertop substrate.

9. Splashes: Provide 4-inch-high splashes fabricated from same material as countertop substrate, not less than ½ inch thick, and complying with the following:

    1. Provide endsplashes or sidesplashes at countertops which die into walls, partitions, or taller millwork.
    2. Match material, color, and height of sidesplashes or endsplashes to backsplashes, and to material and color of countertop.
    3. Provide full-height backsplashes, end- and side-splashes where indicated on Drawings.

2.5 MISCELLANEOUS MATERIALS

1. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content. Where required, provide fire-retardant treated softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

2. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

3. Adhesives: Do not use adhesives that contain urea formaldehyde.

4. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.6 FABRICATION

1. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

2. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

3. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

PART 3 - EXECUTION

3.1 PREPARATION

1. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

1. Grade: Install cabinets to comply with same grade as item to be installed.

2. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

3. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

4. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

5. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

6. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to walls with adhesive.
4. Caulk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."
5. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
6. Refer to Division 09 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3.3 ADJUSTING AND CLEANING

1. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

2. Clean, lubricate, and adjust hardware.

END OF SECTION 06 4116

SECTION 07 1400
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Fluid-Applied Waterproofing.
B. Related Sections:
   1. Section 033000 – Cast in Place Concrete
   2. Section 312310 – Building Excavation and Fill
   3. Section 072113 – Board Insulation

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C-719 Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
   2. ASTM C-836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
   3. ASTM D-2939 Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.
   4. ASTM E-96 Standard Test Method for Water Vapor Transmission of Materials.
   5. ASTM D-466 Standard Test Method for Films Deposited from Bituminous Emulsions
   6. ASTM D-412 Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers-Tension
   7. ASTM D-3274 Standard Test Method for Emulsified Bitumens Used as Protective Coatings
   8. ASTM D-2196 Standard Test Method for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer

1.03 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
B. Product Data: Submit manufacturer's product data and installation instructions.
C. Quality Assurance/Control Submittals: Submit the following:
   1. Certificates: Submit certificate that applicator complies with requirements of this section.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Utilize an applicator trained and approved by the waterproofing manufacturer.
B. Regulatory Requirements and Approvals: Comply with requirements of the following:

1. ICC Evaluation Service, Inc. (ICC-ES)
    a. Legacy Report NER-658

1.05 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.
B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1.06 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Comply with application temperature range of 20 - 130°F (-6.67 - 55°C).

1.07 WARRANTY

A. Manufacturer's Material Only Warranty available.

PART 2 PRODUCTS

2.01 FLUID-APPLIED WATERPROOFING

A. Manufacturer: Mar-flex Waterproofing and Building Products
    1. Contact: Mar-flex: 500 Business Pkwy, Carlisle, OH 45005; Telephone: (800) 498-1411, (513) 422- 7285; Fax: (513) 422-7282
    2. E-mail: info@mar-flex.com website: www.Mar-flex.com
B. Proprietary Products/Systems should be purchased through an Authorized Dealer of Mar-flex Products.
C. Fluid-Applied Waterproofing and related products, including the following:

    1. Mar-flex 5000™ WB Waterproofing Membrane:
        a. Material: Emulsion
        b. Color: Black
        c. Total Solids: 60-70%, VOC <100 g/L
        d. Application Method: [Spray] [Brush] [Roll]
        e. Coverage Rate: 5-gal/100 ft^2
        f. Film Thickness, Wet: 55 mil Dry: 40 mil (1.5 mm) min.
        g. Total Cure Time: 24 hours
        h. Weight/Gallon: 7.6 lb (3.4 kg)
        i. Elongation at 70°F (21°C) (ASTM D-412 Method A): >2200%
        j. Tensile Strength (ASTM C-719): 48 psi (331 kPa)
        k. Low Temperature Flexibility at -15°F(ASTM C 719): No cracking
        l. Crack Bridging (ASTM C-836): 10 cycles without bond failure
        m. Viscosity/Centipoise: (ASTM D-2196): 3600 centipoise
        n. Resistance to Water Flow (ASTM D-466): Bond strength not affected
        o. Water Solubility (ASTM D-2939): No blistering or re-emulsion

p. Resistance to Hydrostatic Pressure (Federal Spec TT-C-555B, Par.4.4.7.):
   i. Water Leaks: None
   ii. Weight Gain: None
q. Water Vapor (ASTM E-96):
   i. Transmission: 0.11 grains/sf/h.
   ii. Permeability: 0.35 perms (g/h-sq.ft.-in.Hg)
   iii. Specifier Note: Specify appropriate drainage/insulation board below to suit project requirements.

2. Geo-Mat™ Plus Drainage Roll:
   a. Material: High Density Polyethylene (HDPE) drainage rolls with attached polypropylene geotextile mat.
   b. Foundation Drainage Rate: 18 gal/min/ft
3. Type II™/"C" Drain 150 Dimpleboard:
   a. Material: Polystyrene compressed into a moderate-duty dimpled core bonded to a single layer of non-woven filter fabric.
   b. Foundation Drainage Rate: 21 g/pm/ft width

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions:Substitutions permitted.

2.03 ACCESSORY MATERIALS

A. Provide proprietary accessory materials, including the following:

1. Mar-flex Mastic:
   a. Material: Plastic or resin material compatible with the waterproofing membrane.
2. Mar-flex 12" GeoDrain
3. Mar-flex 12" Connectors

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Comply with the most current written installation instructions and recommendations of the waterproofing manufacturer.

3.02 EXAMINATION

A. Site Verification of Condition:
   1. Verify that site conditions are acceptable for application of the waterproofing system.
   2. Do not proceed with application until unacceptable conditions are corrected.

3.03 PREPARATION

A. Surface Preparation:
   1. Ensure that the surfaces to receive waterproofing are structurally sound and free of moisture, dust, mud, loose mortar, fins, metal projections or any

substances that would be detrimental to the bonding of the membrane to the surface.
2. Remove wall ties.
3. Patch cracks, voids and holes with nonshrink grout or mastic.

3.04 APPLICATION

A. For vertical application [Spray] [Brush] [Roll] [Trowel] apply a uniform coat of waterproofing to entire wall area. Obtain a seamless membrane free of entrapped gasses, with a minimum dry film thickness of 80 mil (2 mm) at 10 feet (3.1 m) below-grade wall application, 100 mil (2.5 mm) at 20 feet (6.1 m) below-grade wall application and 120 mil (3 mm) at 30 feet (9.2 m) or more for below-grade wall application.
   1. Apply fluid membrane onto footing area a minimum of 4 inches (102 mm) to prevent water pooling.
   2. Allow membrane to cure for 24 hours before placing any backfill against the wall.
   3. Can be applied to "Green" concrete following form removal.
   4. Follow the current installation instructions.

B. For horizontal application [Spray] [Brush] [Roll] apply a uniform coat of waterproofing to entire wall area. Obtain a seamless membrane free of entrapped gasses, with a minimum dry film thickness of 100 mil (2.5 mm) for Above/At grade application.
   1. Allow the fluid membrane to cure out approximately 3-4 hours.
   2. Fluid membrane will still be tacky.
   3. Install "C" Drain 400 following current installation instructions.

3.05 INSULATING/DRAINAGE PANEL INSTALLATION

A. When using the Geo-Mat Plus, install after membrane has been applied. Place and secure to substrate according to manufacturer's current written instructions.
   1. While the membrane is still tacky, begin installation at a corner. Install horizontally against the waterproofing membrane with the polypropylene geotextile mat side facing out-ward.
   2. Install panels from top of footing extending to finish grade level. If there is overlapping off the membrane once you have reached the grade line, a utility knife or similar tool can be used to cut the rolls to the correct height.
   3. For good adherence, apply uniform pressure throughout the surface area, not just the edges and corners.
   4. When two edges come together from two separate pieces, overlap the dimples to create a continuous coverage of the wall.
   5. Secure the Geo-Mat Plus to the wall with Geo-Mat accessories.
   6. If the board overlaps the membrane once you have reached the grade line, a utility knife or similar tool can be used to cut the boards to the correct height.

B. When using "C" Drain 400 for flat decking, begin installation after membrane has

been applied. Place draincore to substrate according to manufacturer's current written instructions.

1. Unroll the 400, placing gray side down against membrane. To keep in place, use double sided tape, adhesives or nails.
2. For overlaps, place adjacent sections so that the cores abut. Secure fabric overlap at five foot intervals with glue, tape or nails.
3. Join roll ends by peeling back fabric and removing 4" of core. Place end panels so that cores abut, then glue, tape or nail fabric overlap.
4. Make cuts for any drains to allow water to be drained.
5. Allow 24 hour set time.
6. Pour desired thickness of concrete over the 400.

C. Protect installed insulation/drainage panels during subsequent construction until backfilled.

G. Backfill and Drainage

1. #57 Gravel or equivalent must go no less than 2' high at the base of the foundation and 1' in depth away from the foundation walls.
2. Adequate interior and exterior foundation drainage at the base of the foundation walls, across any floors or adjacent flower beds must be properly installed and functioning properly.
3. Backfilling should begin no sooner than 24 hours after the installation of the board, but must be backfilled within 15 days.

H. 12" GeoDrain Vertical Collection System Installation

1. Unroll material along foundation base; adhere to partially cured waterproofing material; use adhesive acceptable to waterproofing material manufacturer for cured waterproofing or other sheet waterproofing not requiring curing.
2. Install preformed corner fittings at foundation interior and exterior corners.
3. Install outlet fittings where indicated; connect to corrugated drainage pipe if present at time of modular system installation; leave ready for connection to corrugated drainage pipe if not present.

3.06 CLEANING

A. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07 1900
WATER REPELLENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes penetrating water-repellent coatings for the following vertical and horizontal surfaces:

1. Stone Masonry
2. Brick

B. Related Sections include the following:

1. Division 04 Section "Stone Masonry".
2. Division 07 Section "Joint Sealants."

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's standard colors.

B. Manufacturer Certificates: Signed by manufacturers certifying that water repellents comply with requirements.

C. Qualification Data: For Installer.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for assemblies.

E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Testing Agency Qualifications: An independent agency qualified according to ASTM E 548 for testing indicated.

C. Test Application: Apply a finish sample for each type of water repellent and substrate required. Duplicate finish of approved sample.

1. Locate each test application as directed by Architect.
2. Size: 25 sq. ft.
3. Final approval by Architect of water-repellent application will be from test applications.

1.5 PROJECT CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:

1. Ambient temperature is above 40 deg F.
2. Concrete surfaces and mortar have cured for more than 28 days.
3. Concrete or brick masonry walls are not treated prior to 30 days after building close-in.
4. Rain or snow is not predicted within 24 hours.
5. Application proceeds more than seven days after surfaces have been wet.
6. Substrate is not frozen, or surface temperature is above 40 deg F.
7. Windy conditions do not exist that may cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree(s) to repair or replace materials that fail to maintain water repellency specified in Part 1 "Performance Requirements" Article within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

1. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 PENETRATING WATER REPELLENTS

A. Silane/Siloxane-Blend, Penetrating Water Repellent: Clear, silane and siloxane blends with 3.3 lb/gal or less of VOCs.

1. Products:

a. Basis of Design: ProSoCo, Inc.; SL 100 Water Repeller.
b. Substitutions: Under provisions of Division One “Product Requirements” Section.

1) BASF – Hydrozo – Enviroseal 20
2) Primapell H20

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to water-repellent manufacturer's written instructions, to ensure that surface is dry enough.

B. Test for pH level, according to water-repellent manufacturer's written instructions, to ensure chemical bond to silicate minerals.

C. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

D. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply a heavy-saturation spray coating of water repellent on surfaces indicated for treatment using low-pressure spray equipment. Comply with manufacturer's written instructions for using airless spraying procedure, unless otherwise indicated.

C. Apply a second saturation spray coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.3 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Repair damage caused by water-repellent application. Comply with manufacturer's written cleaning instructions.

END OF SECTION - 07 1900

PART 1 - GENERAL

1.1 SUMMARY

A. Related Requirements:

B. Section Includes:
1. Glass-fiber blanket insulation.
2. Mineral-wool blanket insulation.
3. Vapor retarders.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION

A. Glass-Fiber-Blanket Insulation: ASTM C 665, Type I, unfaced.

B. Glass-Fiber-Blanket Insulation: ASTM C 665, Type III, Class A, foil faced on one.

C. Glass-Fiber-Blanket Insulation: ASTM C 665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier) foil-scrim polyethylene.

2.2 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed Corporation.
2. Guardian Building Products, Inc.
3. Johns Manville.
4. Knauf Insulation.

5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

C. Kraft-Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type II (non-reflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.2 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Glass-Fiber Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.

4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings and seal each continuous area of insulation to ensure airtight installation.

    a. Exterior Walls: Set units with facing placed toward exterior of construction or as indicated on Drawings.

3.3 INSTALLATION OF INSULATION FOR CONCRETE AND CONCRETE MASONRY SUBSTRATES

A. Install board insulation on concrete and concrete masonry substrates by adhesively attached, spindle-type insulation anchors as follows:

1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.4 INSTALLATION OF VAPOR RETARDERS

A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs.

1. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches o.c.
2. Before installing vapor retarders, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
3. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

3.5 APPLICATIONS

A. Exterior Stud Walls and Roofs:
   1. Thermal Insulation Performance Criteria: Refer to sheet G-003 for min. **R-VALUES.**
      a. Wall: R-value: Provided as batt insulation between light gauge framing infill.
      b. Roof: R- value: 30 minimum, nominally 8 inches thick, or installed in 2 courses of R-19 + R11 LS.

   2. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread/smoke index of 25/50 or less.
      a. R-Value (Roof): 30, 2 course. Facing: Vinyl, color: black, used in conjunction with 1 course unfaced insulation laid above.
      b. R-Value (Walls): 19, 1 course. Facing: Vinyl, color: black.

   3. Unfaced Metal Building Insulation: ASTM C 991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread/smoke index of 25/50 or less.

      a. R-Value (Roof): 13, 1 course, used in conjunction with 1 course faced insulation laid below.
      b. R-Value (Walls): None.
   4. Retainer Strips: 26 gauge galvanized steel, colored to match insulation facing.
   5. Thermal Spacer Blocks: R value minimum 3.5, applied to top of purlins to offset compressing draped glass-fiber blanket insulation.

B. Ceiling (Accoustical Isulation): Batt type.

   1. R-Value: 30.
   2. Thickness: Minimum 6 inches, depending on manufacturer.

C. Interior Walls (Acoustic Insulation), where indicated: Acoustical batt or blanket type.

   1. Thickness: Minimum 3 inches.
   2. Facing: None.
   3. Facing: Vapor retarder.

END OF SECTION 07 2100

SECTION 07 4113

METAL ROOF PANELS (STANDING SEAM)

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Standing seam metal roof panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

A. Division 07 Section for thermal insulation installed under metal panels.

B. Division 07 Section "Sheet Metal Flashing and Trim" for formed sheet metal copings, flashings, reglets, and roof drainage items in addition to items specified in this Section.

C. Division 07 Section "Manufactured Roof Specialties" for manufactured copings, reglets, and roof drainage items in addition to items specified in this Section.

D. Division 07 Section "Joint Sealants" for field-applied Joint Sealants.

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:

1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.

B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM): www.astm.org:

1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM A 980 - Standard Specification for Steel, Sheet, Carbon, Ultra High Strength Cold Rolled.

5. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
6. ASTM C 920 - Specification for Elastomeric Joint Sealants.
7. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
8. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
9. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
10. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
11. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
12. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
13. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. International Accreditation Service (IAS):

1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

E. Underwriters Laboratories, Inc. (UL): www.ul.com:

1. UL 580 - Tests for Uplift Resistance of Roof Assemblies

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.
3. Coordinate work of Division 07 Sections "Roof Specialties" and "Roof Accessories" and openings and penetrations and manufacturer's accessories with installation of metal panels.

1.5 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.
b. Samples of each component.
c. Sample submittal from similar project.
d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
e. Sample warranty.
f. IAS AC 472 certificate.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

C. Installer Qualifications: Experienced Installer certified by metal panel manufacturer with minimum of five years experience with successfully completed projects of a similar nature and scope.

1. Installer's Field Supervisor: Experienced mechanic certified by metal panel manufacturer supervising work on site whenever work is underway.

1.6 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets for specified products.

B. Shop Drawings: Show layouts of metal panels. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

1. Indicate points of supporting structure that must coordinate with metal panel system installation.
2. Include data indicating compliance with performance requirements.
3. Include structural data indicating compliance with requirements of authorities having jurisdiction.

C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

D. Samples for Verification: Provide 12-inch- (305 mm-) long section of each metal panel profile. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.

B. Qualification Information: For Installer firm and Installer’s field supervisor.

C. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.

D. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.

1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 COORDINATION

A. Coordinate sizes, profiles, and locations of roof curbs and other roof-mounted equipment and roof penetrations, based upon sizes of actual selected equipment.

1.11 WARRANTY

A. Special Manufacturer’s Warranty: On manufacturer’s standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.

B. **Special Weathertightness Warranty**: On manufacturer’s standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail to remain weathertight, including leaks, without monetary limitation up to cost limitation of fourteen dollars ($14.00) per square foot of covered area within 20 years from date of Substantial Completion.

C. Special Panel Finish Warranty: On Manufacturer’s standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:

1. Fluoropolymer Two- Coat System:

a. Color fading in excess of 10 Hunter units per ASTM D 2244.
b. Chalking in excess of No.6 rating per ASTM D 4214.
c. Failure of adhesion, peeling, checking, or cracking.

2. Modified Silicone-Polyester Two-Coat System:

a. Color fading in excess of 7 Hunter units per ASTM D 2244, for vertical applications.
b. Color fading in excess of 10 Hunter units per ASTM D 2244, for non-vertical applications.
c. Chalking in excess of No.7 rating per ASTM D 4214, for vertical applications.
d. Chalking in excess of No 5 rating per ASTM D 4214, for non-vertical applications.
e. Failure of adhesion, peeling, checking, or cracking.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Manufacturer: Berridge Manufacturing Company.

1. Provide basis of design product, or comparable product approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:

1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.

a. Wind Uplift Testing: Certify capacity of metal panels by actual testing of proposed assembly per ASTM E 1592.

2. Snow Loads: As indicated on the structural drawings.
3. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection see structural drawings for deflection limits.
4. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."

C. Wind Uplift Resistance: See Structural drawings.

D. Air Infiltration, ASTM E 1680:

1. Maximum 0.25 cfm/sq. ft. (1.27 L/s per sq. m) at static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).
2. Maximum 0.50 cfm/sq. ft. (2.54 L/s per sq. m) at static-air-pressure difference of 12.00 lbf/sq. ft. (575 Pa).

E. Water Penetration Static Pressure, ASTM E 1646: No uncontrolled water penetration at a static pressure of 12 lbf/sq. ft. (575 Pa).

F. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

2.3 METAL ROOF PANELS

A. Mechanically-Seamed Standing Seam Metal Roof Panels

1. Basis of Design: Berridge Manufacturing Double-Lock Zee-Lock Panel
2. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
   a. Nominal Thickness: **0.024 inch (0.61 mm)**
   b. Exterior Finish: Two-coat fluoropolymer.
   c. Painted materials shall have a removable plastic film to protect the paint during roll forming, shipping and handling.
   d. Color: As shown on drawings.
3. Clips: Two-piece floating Zee-Clip to accommodate thermal movement.
   a. Material: 0.024-inch (0.61-mm) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
4. Joint Type: Double folded.
5. Panel Coverage: 16 inches (406 mm).
6. Panel Height: 2.0 inches (51 mm).

2.4 METAL ROOF PANEL ACCESSORIES

A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in manufacturer's standard profiles. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

C. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets and heads matching color of metal panels by means of factory-applied coating.

D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:

1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.

E. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

2.5 ROOF INSULATION

1. See section 13 3419 Metal building systems for roof insualtion.

2.6 SNOW GUARDS

A. Snow Guards to be furnished by Alpine SnowGuards.

a. Provide at locations indicated on Drawings.

2.7 FABRICATION

B. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.

C. Fabricate metal panel joints configured to accept factory-applied sealant providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.

D. Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

PART 1 - PART 3 EXECUTION

1.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

1.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

1.3 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations recommended by manufacturer wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 36 inches (914.4 mm). Cover underlayment within 14 days or as directed by the underlayment product manufacturer.

B. Felt Underlayment: Apply at locations recommended by manufacturer in shingle fashion to shed water, and with lapped joints of not less than 2 inches (50 mm).

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

1.4 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels to be level to 1/4 inch in 20 ft. (6 mm in 6.1 m).
2. Flash and seal metal panels at perimeter of all openings. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Locate and space fastenings in uniform vertical and horizontal alignment.
4. Install flashing and trim as metal panel work proceeds.
5. Panels should be continuous without end laps.
6. Align bottoms of metal panels and fasten.
7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

2. Aluminum Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use stainless-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates, if required, at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel are completely engaged.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.
1. Connect downspouts to underground drainage system indicated.

J. Roof Curbs: Install flashing around bases where they meet metal roof panels.

K. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

L. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

M. Prepare test and inspection reports.

1.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

1.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

1.7 CLEANING AND PROTECTION

A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION 07 4113

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Trapezoidal-rib, snap joint, standing seam metal roof panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

A. Division 07 Section for thermal insulation installed under metal panels.

B. Division 07 Section "Sheet Metal Flashing and Trim" for formed sheet metal copings, flashings, reglets, and roof drainage items in addition to items specified in this Section.

C. Division 07 Section "Manufactured Roof Specialties" for manufactured copings, reglets, and roof drainage items in addition to items specified in this Section.

D. Division 07 Section "Joint Sealants" for field-applied Joint Sealants.

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:

1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.

B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM): www.astm.org:

1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM A 980 - Standard Specification for Steel, Sheet, Carbon, Ultra High Strength Cold Rolled.
5. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
6. ASTM C 920 - Specification for Elastomeric Joint Sealants.
7. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.

8. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
9. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
10. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
11. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
12. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
13. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. International Accreditation Service (IAS):

1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

E. Underwriters Laboratories, Inc. (UL): www.ul.com:

1. UL 580 - Tests for Uplift Resistance of Roof Assemblies

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.
3. Coordinate work of Division 07 Sections "Roof Specialties" and "Roof Accessories" and openings and penetrations and manufacturer's accessories with installation of metal panels.

1.5 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.
b. Samples of each component.
c. Sample submittal from similar project.
d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
e. Sample warranty.
f. IAS AC 472 certificate.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

C. Installer Qualifications: Experienced Installer certified by metal panel manufacturer with minimum of five years experience with successfully completed projects of a similar nature and scope.

1. Installer's Field Supervisor: Experienced mechanic certified by metal panel manufacturer supervising work on site whenever work is underway.

1.6 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets for specified products.

B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, roof accessories, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.

1. Indicate points of supporting structure that must coordinate with metal panel system installation.
2. Include data indicating compliance with performance requirements.
3. Include structural data indicating compliance with requirements of authorities having jurisdiction.

C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

D. Samples for Verification: Provide 12-inch- (305 mm-) long section of each metal panel profile. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.

B. Qualification Information: For Installer firm and Installer’s field supervisor.

C. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.

D. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.

1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 COORDINATION

A. Coordinate sizes, profiles, and locations of roof curbs and other roof-mounted equipment and roof penetrations, based upon sizes of actual selected equipment.

1.11 WARRANTY

A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.

B. **Special Weathertightness Warranty**: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail to remain weathertight, including leaks, without monetary limitation up to cost limitation of fourteen dollars ($14.00) per square foot of covered area within 20 years from date of Substantial Completion.

C. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:

1. Fluoropolymer Two- Coat System:

    a. Color fading in excess of 10 Hunter units per ASTM D 2244.
    b. Chalking in excess of No.6 rating per ASTM D 4214.
    c. Failure of adhesion, peeling, checking, or cracking.

2. Modified Silicone-Polyester Two-Coat System:

    a. Color fading in excess of 7 Hunter units per ASTM D 2244, for vertical applications.
    b. Color fading in excess of 10 Hunter units per ASTM D 2244, for non-vertical applications.
    c. Chalking in excess of No.7 rating per ASTM D 4214, for vertical applications.
    d. Chalking in excess of No 5 rating per ASTM D 4214, for non-vertical applications.
    e. Failure of adhesion, peeling, checking, or cracking.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Manufacturer: **MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.**; Houston TX. Tel: (877)713-6224; Email: info@mbci.com; Web: www.mbci.com.

1. Provide basis of design product, or comparable product approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:

1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.

a. Wind Uplift Testing: Certify capacity of metal panels by actual testing of proposed assembly per ASTM E 1592.

2. Snow Loads: As indicated on the structural drawings.
3. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection see structural drawings for deflection limits.
4. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."

C. Wind Uplift Resistance: See Structural drawings.

D. Air Infiltration, ASTM E 1680:

1. Maximum 0.25 cfm/sq. ft. (1.27 L/s per sq. m) at static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).
2. Maximum 0.50 cfm/sq. ft. (2.54 L/s per sq. m) at static-air-pressure difference of 12.00 lbf/sq. ft. (575 Pa).

E. Water Penetration Static Pressure, ASTM E 1646: No uncontrolled water penetration at a static pressure of 12 lbf/sq. ft. (575 Pa).

F. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

2.3 METAL ROOF PANELS

A. Snap Joint, Concealed Fastener, Trapezoidal Seam Metal Roof Panels: Structural metal roof panel consisting of formed metal sheet with raised trapezoidal ribs at panel edges, installed by

lapping and interlocking edges of adjacent panels, and mechanically attaching panels to supports using concealed clips and fasteners in a weathertight installation.

1. Basis of Design: **MBCI, Ultra-Dek,** www.mbci.com/ultradek.html.
2. **Aluminum-Zinc Alloy-Coated Steel Sheet**: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50 (Grade 340, Coating Class AZM150), prepainted by the coil-coating process per ASTM A 755/A 755M.
3. **Aluminum-Zinc Alloy-Coated Steel Sheet**: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ55 (Grade 340, Coating Class AZM165) unpainted Galvalume Plus coating.

    a. Nominal Coated Thickness: 22 gage.
    b. Panel Surface: Smooth with minor ribs in pan.
    c. Exterior Finish: Modified silicone-polyester two-coat system.
    d. Color: As selected by Architect from manufacturer's standard colors.

4. Panel Width: 24 inches (610 mm).
5. Panel Seam Height: 3 inch (76 mm).
6. Joint Type: Snap joint.

B. Gutters: 22 gage. Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch (2400-mm) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches (914 mm) o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.

C. Downspouts 22 gage: Formed from same material as roof panels. Fabricate in 10-foot (3-m) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.

2.4 METAL ROOF PANEL ACCESSORIES

A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in manufacturer's standard profiles. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

C. Panel Clips: Provide panel clip of type specified, at spacing indicated on approved shop drawings.

1. **Two-piece Floating**: ASTM C 645, with ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.

D. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets and heads matching color of metal panels by means of factory-applied coating.

E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:

1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.

F. **Steel Sheet Miscellaneous Framing Components**: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

2.5 FABRICATION

A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.

B. Fabricate metal panel joints configured to accept factory-applied sealant providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.

C. Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.6 ROOF INSULATION

1. See section 13 3419 Metal building systems for roof insualtion.

2.7 SNOW GUARDS

A. Snow Guards to be furnished by Alpine SnowGuards.

*a. **Provide at locations indicated on Drawings.***

2.8 FINISHES

E. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

F. **Modified Silicone-Polyester Two-Coat System**: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat, meeting solar reflectance index requirements.

1. Basis of Design: **MBCI, Signature 200**.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.

1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:

    a. 1/4 inch (6 mm) in 20 foot (6.1 m) in any direction.
    b. 3/8 inch (9 mm) over any single roof plane.

B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal roof panel system installation.

3.2 PREPARATION

A. **Miscellaneous Supports**: Install subframing, girts, furring, and other miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.

B. Flashings: Provide flashings as required to complete metal roof panel system. Install in accordance with Section 07 62 00 "Sheet Metal Flashing and Trim" and approved shop drawings.

3.3 METAL PANEL INSTALLATION

A. Snap-Joint, Trapezoidal Standing Seam Metal Roof Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal roof panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.

B. Attach panels to supports using clips, screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.

1. Fasten metal panels to supports with concealed clips at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
3. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.

3. Provide concealed fasteners except where noted on approved shop drawings.
4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.

B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.

1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 07 4213
METAL WALL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Exposed fastener metal wall panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

A. Division 07 Section "Metal Roof Panels" for factory-formed metal roof panels.

B. Division 07 Section "Joint Sealants" for field-applied Joint Sealants.

C. Division 13 Section "Metal Building Systems" for steel framing supporting metal panels.

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:

1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.

B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM): www.astm.org:

1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
5. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
6. ASTM C 920 - Specification for Elastomeric Joint Sealants.
7. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
8. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

9. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
10. ASTM E 283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
11. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
12. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
13. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
14. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. International Accreditation Service (IAS):

1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

1.4 REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.

1.5 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.
b. Samples of each component.
c. Sample submittal from similar project.
d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
e. Sample warranty.
f. IAS AC 472 certificate.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

C. Installer Qualifications: Experienced Installer with minimum of five years experience with successfully completed projects of a similar nature and scope.

1. Installer's Field Supervisor: Experienced mechanic, able to communicate with Owner, Architect, and installers, supervising work on site whenever work is underway.

1.6 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets for specified products.

B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, and special details. Make distinctions between factory and field assembled work.

1. Indicate points of supporting structure that must coordinate with metal panel system installation.
2. Include data indicating compliance with performance requirements.
3. Include structural data indicating compliance with requirements of authorities having jurisdiction.

C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

D. Samples for Verification: Provide 12-inch long section of each metal panel profile. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.

B. Qualification Information: For Installer firm and Installer’s field supervisor.

C. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.

D. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.

1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 WARRANTY

A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.

B. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Manufacturer: **MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.**; Houston TX. Tel: (877)713-6224; Email: info@mbci.com; Web: www.mbci.com.

1. Provide basis of design product, or comparable product approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

A. General: Provide metal wall panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

B. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

C. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:

1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
2. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code.
3. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."

D. **Air Infiltration**: ASTM E 1680: Maximum 0.006 cfm/sq. ft. at 6.24 lbf/sq. ft static-air-pressure difference.

2.3 METAL PANEL MATERIALS

A. **Aluminum-Zinc Alloy-Coated Steel Sheet**: ASTM A 792/A 792M, structural quality, Coating Class AZ50 prepainted by the coil-coating process per ASTM A 755/A 755M.

2.4 METAL WALL PANELS

A. **(WP-1) Large Tapered-Rib-Profile, Exposed Fastener Metal Panels**: Structural metal panel consisting of formed metal sheet with trapezoidal major ribs with intermediate stiffening ribs symmetrically placed between major ribs, installed by lapping edges of adjacent panels.

1. Basis of Design: **MBCI, 7.2 Panel,** www.mbci.com/pbr.html. (Field panel)
2. Coverage Width: 24 inches.
3. Major Rib Spacing: 12 inches on center.
4. Rib Height: 1-1/4 inch.
5. Nominal Coated Thickness 26 gage.
6. Panel Surface: Smooth.
7. Exterior Finish: Fluoropolymer two-coat system.
8. Color: As selected by Architect from manufacturer's standard colors.

B. **(WP-2) Linear Panel (Interior Gym)**.

1. Basis of Design: **MBCI, Artisan,** www.mbci.com/pbr.html.
2. Coverage Width: 12 inches.
3. Smooth finish.
4. Signature 200 Finnish.

C. **(WP-3) Soffit Panel (Canopy at Food Service)**.

1. Basis of Design: **MBCI, Artisan,** www.mbci.com/pbr.html.
2. Coverage Width: 12 inches.
3. Smooth finish.
4. Signature 200 Finnish.

D. **(WP-4) Metal Wall Panel (Accent Wood)**
1. Basis of Design: Berridge metal liner panel.

a. Nominal Thickness: 0.024 inch
b. Surface Woodgrain Embossed finish.
c. Exterior Finish: Two-coat fluoropolymer.
d. Color: Rosewood.

E. **(WP-5) Metal Soffit Panel (Accent Wood at main Entry)**
1. Basis of Design: Berridge metal liner panel.
a. Nominal Thickness: 0.024 inch
b. Surface Woodgrain Embossed finish.
c. Exterior Finish: Two-coat fluoropolymer.
d. Color: Rosewood.
1)

F. **(WP-6) Mechanically-Seamed Standing Seam Metal Wall Panels (At main Entry)**
1. Basis of Design: Berridge Manufacturing Double-Lock Zee-Lock Panel
a. Nominal Thickness: **0.024 inch (0.61 mm)**
b. Exterior Finish: Two-coat fluoropolymer.
c. Painted materials shall have a removable plastic film to protect the paint during roll forming, shipping and handling.
d. Color: As selected by Architect from manufacturer's full range.
2. Panel Coverage: 16 inches (406 mm).
3. Panel Height: 2.0 inches (51 mm).

2.5 METAL PANEL ACCESSORIES

A. General: Provide complete metal panel assembly incorporating base, corner, and opening trims and miscellaneous flashings, in [manufacturer's standard profiles] [profiles as indicated]. Provide required fasteners, closure strips, support plates, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

C. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by metal panel manufacturer.

1. Exposed Fasteners: Long life fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.

D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:

1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.

E. **Steel Sheet Miscellaneous Framing Components**: ASTM C 645, with ASTM A 653/A 653M, G60 hot-dip galvanized zinc coating.

2.6 FABRICATION

A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.

B. Panel Lengths: Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.7 FINISHES

A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

B. **Fluoropolymer Two-Coat System**: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621, meeting solar reflectance index requirements.

1. Basis of Design: **MBCI, Signature 300**.

C. Interior Finish: 0.5 mil total dry film thickness consisting of primer coat and wash coat of manufacturer's standard light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.

1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:

a. 1/4 inch in 20 foot in any direction.

B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with metal panel system installation.

3.2 PREPARATION

A. **Miscellaneous Supports**: Install subframing, girts, furring, and other miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.

B. Flashings: Install flashings to cover exposed underlayment per Section 07 62 00 "Sheet Metal Flashing and Trim."

3.3 METAL PANEL INSTALLATION

A. Exposed Fastener Metal Wall Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.

B. Panel Sealants: Install manufacturer's recommended tape sealant at panel sidelaps and endlaps.

C. Panel Fastening: Attach panels to supports using screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.

1. Fasten metal panels to supports at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
2. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
3. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.

B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.

1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective films immediately in accordance with metal panel manufacturer's instructions. Clean finished surfaces as recommended by metal panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 07 5423
THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fully adhered TPO membrane roofing system.
2. Roof insulation.
3. Cover board.
4. Protective top sheet.

B. Related Sections:

1. Section 06 1053 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 6200 "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counter flashings.
3. Section 07 7100 “Roof Specialties” for coping and roof edges.
4. Section 07 7129 “Roof Expansion Joints” for elastomeric roof expansion joint covers.
5. Section 07 7200 “Roof Accessories” for roof hatches.
6. Section 10 8200 “Rooftop Equipment Screen” for surface mounted and secured sheet metal louvered roof equipment screens.

1.2 DEFINITIONS

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

1. Corner Uplift Pressure: Specified on Drawings.
2. Perimeter Uplift Pressure: Specified on Drawings.
3. Field-of-Roof Uplift Pressure: Specified on Drawings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.
2. Tapered insulation for crickets only on non-tapered roof insulation system.
3. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification: For the following products:

1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
2. Roof insulation.
3. Six insulation fasteners of each type, length, and finish.
4. Six roof cover fasteners of each type, length, and finish.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For qualified manufacturer.
2. For qualified installer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: An experienced firm that has a proven record on successful installation within the last five (5) years for the indicated type and size of roofing system. Provide list of such projects upon request.

C. Not Used.

D. Exterior Fire-Test Exposure: ASTM E 108, Class C, minimum; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, roofing accessories, roof pavers, and other components of membrane roofing system.
2. Warranty Period: 20 years from date of Substantial Completion- No dollar limit.

B. Project Installer's Special Warranty: Submit roofing Installer's special warranty, on an industry standard warranty form which is also compatible with roofing manufacturer's requirements and standards, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TPO MEMBRANE ROOFING

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible TPO sheet.

1. Basis-of-Design Manufacturer: Johns Manville.
2. Other Available Manufacturers: Subject to compliance with requirements, other available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle SynTec Incorporated – Sure- Weld TPO fully adhered Roofing systems..
b. Versico.

3. Thickness: 60 mils, nominal.
4. Exposed Face Color: White.

B. Self-Adhered Membrane Thickness: 60 mils (1.52 mm), nominal
a. Exposed Face Color: White
b. Serviceable Installation Temperature: 20°F (-7°C) and above.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 60 mils (1.5 mm) thick, minimum, of same color as sheet membrane.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

E. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

F. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.

G. Sheet Flashing: Manufacturer's internally reinforced or scrim reinforced. Basis of design: JM TPO 60 mil

H. Sheet Flashing (Self-Adhered): 60 mil (1.5 mm) thick, manufacturer's internally reinforced or scrim reinforced with weldable selvage edges on each side of roll, one encapsulated edge and self-adhering capabilities in a wide installation temperature range. Basis of design: JM TPO SA – Flashing Membrane

1. Serviceable Installation Substrate Temperature: 20°F (-7°C) and rising.

I. Bonding Adhesive: Manufacturer's standard bonding adhesive for membrane.

1. Serviceable Installation Ambient Air Temperature: 25°F and rising

J. Flashing Adhesive: Manufacturer's standard based bonding adhesive for base flashings.

1. Serviceable Installation Ambient Air Temperature: 25°F and rising.

K. Urethane Adhesive: Manufacturer's standard two component no VOC urethane adhesive for fleece-backed membranes.

L. Self-Adhered Primer: One-part penetrating primer solution to enhance the adhesion of self-adhering membranes.

M. Liquid Applied Flashing: Manufacturer's single ply liquid and fabric reinforced flashing system created with a fleece polyester scrim and a two-component polyurethane-based liquid applied flashing material, consisting of a liquid resin and a curing agent. Basis of design: JM SP Liquid Flashing Resin and JM SP Liquid Flashing Scrim

N. Liquid Applied Flashing Primer: Manufacturer's single ply liquid flashing primer. Basis of design: JM SP Liquid Flashing TPO and PVC Primer, JM SP Liquid Flashing Concrete Primer, or JM SP Liquid Flashing Metal and Wood Primer

O. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

P. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors. Basis of design: JM Termination Systems

Q. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

R. Polymer Fasteners: Glass-reinforced nylon fasteners with ¼" square drive and 1" head with Galvalume®*-coated 2" metal stress plates, designed to lock into the fastener head. Fasteners designed for fastening roof insulation to substrate and furnished by roofing system manufacturer.

S. Induction Welding Plate: A round specially coated Galvalume® plate with a recessed center and raised flat bonding surface specifically designed for induction welding application.

T. Miscellaneous Accessories: Provide all accessories to meet the roofing manufacturer's guarantee requirements.

2.3 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated. Insulation fully adhered.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2 or better, felt or glass-fiber mat facer on both major surfaces.

1. Basis-of-Design Manufacturer: GAF. Johns Manville International, Inc.
2. Other Available Manufacturers:

    a. Carlisle SynTec Incorporated.
    b. Celotex Corporation.
    c. Firestone Building Products Company.
    d. GAF

C. Thickness indicated on drawings.

D. Thickness of New Insulation: Where new insulation is installed in a field no abutting any existing insulation, and is contained in an area entirely on its own provide the following:

1. R-Value: Minimum aged R-25ci with cover board.
2. Thickness: Single or multiple layers required to achieve listed minimum R-value. Confirm R-values of selected product with manufacturer.

E. Tapered Insulation: Provide factory – tapered insulation boards fabricated to a slope ¼” per 12” inches unless otherwise indicted.

F. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.4 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

2.5 COVER BOARD

A. High-Density Polyisocyanurate: ASTM C 1289, Type II, Class 4, Grade 3; ½-inch thick, high-density (HD) Polyisocyanurate cover board; bonded in-line to mineral surfaced, fiber glass reinforced facers.

1. Basis of Design: CureShield.
2. Minimum allowable physical properties:

    a. R-Value (Minimum): 2.5ci.
    b. Compressive Strength: 150 psi
    c. Flexural Strength: 1500 psi
    d. Water Absorption: <4%

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness.

1. Where insulation manufacturer is unable to provide a board product in a single thickness indicated on the Drawings, and which the insulation manufacturer or the roofing manufacturer will not warrant, and overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
2. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened and Adhered Insulation (Steel Decking): Install each layer of insulation and secure to steel roof decking using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
2. Where thickness of insulation exceeds depth permitted for full mechanical attachment, mechanically attach first course of insulation, but not less than 1-1/2 inches thick, and proceed to attach subsequent courses using cold adhesives, fully bedding each course, utilizing spreading methods and rates recommended by roofing membrane and insulation manufacturers.
3. Fully adhere cover board to rigid roof insulation using full bedding of cold adhesives.
4. Offset all joints in insulation and cover boards a minimum of 6 inches.

3.4 FULLY ADHERED MEMBRANE ROOFING INSTALLATION

A. Fully adhere membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions. Apply bonding adhesive to underside of the roofing membrane and to the corresponding substrate area with methods and spreading rates recommended by roofing membrane manufacturer. Allow adhesive to dry until tacky and roll coated membrane onto substrate. Avoid wrinkling. Brush down bonded portion of membrane sheet immediately with soft bristle broom(s).

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Prepare roofing membrane which has been left exposed to weather and elements for approximately 7 days by cleaning and preparing surfaces to be joined with manufacturer's cleaner designed for this purpose. Employ cleaning techniques recommended in writing and by manufacturer's on-site representative to prepare surface and remove cleaner residue prior to hot-air welding seams.
2. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
3. Overlap adjacent membrane sheets approximate 5-1/2 inches, and a minimum of 2 inches at end roll sections.
4. Hot air weld membrane sheets a minimum of 1-1/2 inches with a hot air welding machine recommended or provided by roofing membrane manufacturer.
5. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
6. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

3.5 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

F. Install horizontal termination bars or continuous battens that are designed with sealant-receptor edges at midpoint of wall and parapet wall flashings exceeding 42 inches in height, or as indicated on Drawings, or as recommended by membrane roofing manufacturer. Anchor bars

through substrate to steel stud framing members using screws recommended by roofing manufacturer. After installation of bars is complete, seal top and bottom edges, and head of all screws with silicone sealant or other roofing sealant compatible with roofing membrane.

3.6 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION 07 5423

SECTION 07 7100
ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Copings.
   2. Roof-edge flashings.

1.2 PERFORMANCE REQUIREMENTS

A. SPRI Wind Design Standard: Manufacture and install copings and roof-edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressures:
   1. Design Pressure: As indicated on Drawings.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Data:

□□□ 1. Provide manufacturer documentation indicating initial or three-year aged SRI

2. Provide EPD that complies with one of the following:

a. Product-specific declaration ii. Industry-wide (generic) EPD -Products with third-party certification.

b. (Type III)

1) ii. Product-specific Type III EPD - Products with third-party certification (Type I)

3. Provide HPD in which the end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.

C. Shop Drawings: For roof specialties. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.

D. Samples: For each exposed product and for each color and texture specified.

E. Maintenance data.

F. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Single-Source: Obtain all roof specialties from one manufacturer with sufficient capacity to produce quantities required for each type of product.

B. Provide roof specialties manufactured by or approved by roofing membrane manufacturer which will not void warranty of roofing membrane system.

C. Preinstallation Conference: Conduct conference at Project site.

1.5 WARRANTY

A. Manufacturer's Standard Warranty: Manufacturer's standard form that warranted materials shall be free of defects in materials for twenty years after Substantial Completion subject to conditions below. If, after inspection, manufacturer agrees that materials are defective, the manufacturer shall at its option repair or replace them.
   1. 20 Year Warranty Conditions: Manufacturer shall guarantee that a standard size roof edge system, when installed according to manufacturer's written instruction and using a 20 gauge cleat system, will not blow off, leak or cause membrane failure in wind conditions up to 110 mph, or manufacturer shall at its option repair or replace materials.

B. Installers' Special Warranty: Installer guarantees that materials will be installed in accordance with manufacturer's written instructions, and will warrant his installation for a period of 5 years from date of Substantial completion against blow off, leak, or membrane failure in conditions identical to manufacturer's 20 year warranty.

C. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 COPINGS

A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
   1. Basis-of-Design Manufacturer: Hickman Company, W. P.
   2. Formed Aluminum Sheet Coping Caps: Aluminum sheet, thickness as required to meet performance requirements.

a. Surface: Smooth, flat finish.
b. Finish: To match Berridge “Zinc Grey”.
c. Color: As indicated by manufacturer's designations.

3. Corners: Factory mitered and continuously welded.
4. Coping-Cap Attachment Method: Snap-on or face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.
   a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
   b. Face-Leg Cleats: Concealed, continuous stainless steel.

2.2 ROOF-EDGE SPECIALTIES

A. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding **12 feet** and a continuous metal receiver with integral drip-edge cleat to engage fascia cover and secure single-ply roof membrane. Provide matching corner units.

1. Basis-of-Design Product: Basis-of-Design Product: Subject to compliance with requirements, provide W.P. Hickman Company “Extruded TerminEdge” Roof Edging, or comparable product by one of the following:
   a. Metal-Era, Inc.
   b. Metal-Fab Manufacturing, LLC.
   c. Perimeter Systems; a division of Southern Aluminum Finishing Company, Inc.
2. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, 0.080 inch (2.03 mm) thick, or of thickness as required to meet performance requirements.
   a. Surface: Smooth, flat finish.
   b. Finish: Clear anodic.
   c. Color: To match Dark Bronze by Berridge.
3. Corners: Factory mitered and continuously welded.
4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
5. Receiver: Extruded aluminum, 0.080 inch (2.03 mm) thick.
6. Fascia Accessories: Fascia extenders with continuous hold-down cleats, wall cap, Overflow scuppers.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
   1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
   2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.
   1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
   2. Provide uniform, neat seams with minimum exposure of solder and sealant.
   3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
   4. Torch cutting of roof specialties is not permitted.
   5. Install underlayment with adhesive for temporary anchorage. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches. Roll laps of self-adhering sheet underlayment with roller; cover within 14 days.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
   1. Coat concealed side of roof specialties with bituminous coating where in contact with wood, treated wood, ferrous metal, or cementitious construction.
   2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of self-adhering, high-temperature sheet underlayment.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
   1. Space movement joints at a maximum of 10 feet with no joints within 18 inches of corners or intersections unless otherwise shown on Drawings.
   2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that will penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws <Insert size requirement>.

E. Seal joints and exposed ends of roof edges and copings with sealant as required by roofing-specialty manufacturer for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches except reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.2 COPING INSTALLATION

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners. Install and anchor cleat to continuous cantilevered sheet metal angle (secured to top of parapet framing) with not less than 2 screws of sufficient pull-out capacity and at spacing required by manufacturer to withstand wind uplift as determined by manufacturer's factory mockup testing.

B. Anchor copings to meet performance requirements.

1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements.

3.3 ROOF-EDGE FLASHING INSTALLATION

A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.4 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 07 7100

SECTION 07 7200
ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof hatches.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory indicated.

B. Shop Drawings: For each type of roof accessory indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items.

B. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation.

1. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil.

B. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

C. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.

D. Sealants: As recommended by roof accessory manufacturer for installation indicated.

2.3 ROOF HATCH

A. Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, and integrally formed deck-mounting flange at perimeter bottom.

1. Basis-of-Design Product: Bilco Company (The), Model E-20.
   a. Size 36” x 36”.

2. Other Available Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Acudor Products, Inc.
   b. Babcock-Davis.
   c. Dur-Red Products.
   d. J. L. Industries, Inc.
   e. Milcor Inc.; Commercial Products Group of Hart & Cooley, Inc.
   f. Nystrom.
   g. O'Keeffe's Inc.

B. Type and Size: Single-leaf lid, 36 by 36 inches.

C. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.

D. Hatch Material: Zinc-coated (galvanized) steel sheet, thick.

1. Finish: Factory prime coating.

E. Construction:

1. Insulation: Provide either glass-fiber or polyisocyanurate board as standard with manufacturer.

2. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.

3. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.

4. Fabricate curbs to minimum height of 12 inches unless otherwise indicated.

F. Hardware: Galvanized-steel spring latch with turn handles, butt- or pintle-type hinge system, and padlock hasps inside and outside.

G. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder. Post locks in place on full extension; release mechanism returns post to closed position.

1. Basis-of-Design Product: Bilco, Model LU-1 “LadderUp”.
2. Color: Safety yellow powder coating. Secure to ladder rungs according to safety post manufacturer’s written instructions.

H. Fixed roof hatch safety railing system. Basis of Design: Bilguard rail system meets and exceeds OSHA fall protection regulations (29 CFR 1910.29). Bil-Guard® 2.0 models are available for most roof hatch and automatic fire vent sizes. Guarding of the roof access hatch opening shall be provided with a safety railing system and a self-closing gate [29 CFR 1910.23].

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.

C. Seal joints with sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

A. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

B. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 7200

SECTION 07 8446
FIRE-RESISTIVE JOINT SYSTEMS

1.1 SUMMARY

A. This Section includes fire-resistive joint systems for head-of-wall joints.

B. Related Requirements:

1. 01 8113.14 "Sustainable Design Requirements-LEEDv4".

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly in which fire-resistive joint systems are installed.

B. Joint Systems in and between Fire-Resistance-Rated Constructions: Provide systems with assembly ratings equaling or exceeding the fire-resistance ratings of construction that they join, and with movement capabilities and L-ratings indicated as determined by UL 2079.

C. For fire-resistive systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittals:

1. Product Data for Credit IEQ 2: For fire-resistive joint system sealants, documentation including printed statement of VOC content.

C. Shop Drawings: For each fire-resistive joint system, show each kind of construction condition in which joints are installed; show relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 INFORMATIONAL SUMITTALS

A. Product Certificates: For each type of fire-resistive joint system, signed by product manufacturer.

B. Product Test Reports:
Provide documentation to demonstrate compliance with SCAQMD 1168. All adhesives and sealants wet-applied on site must meet the applicable chemical content requirements of

SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168.

C. Field quality-control test reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."

B. Fire-Test-Response Characteristics: Provide fire-resistive joint systems that comply with the following requirements:

1. Fire-resistance tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for fire-resistive joint systems acceptable to authorities having jurisdiction.
2. Fire-resistive joint systems are identical to those tested per methods indicated in Part 1 "Performance Requirements" Article and comply with the following:

    a. Fire-resistive joint system products bear classification marking of qualified testing and inspecting agency.
    b. Fire-resistive joint systems correspond to those indicated by referencing system designations of the qualified testing and inspecting agency.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency's classification marking applicable to Project and with intact and legible manufacturers' labels identifying product, manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate fire-resistive joint systems per manufacturer's written instructions by natural means or, if this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

PART 2 - PRODUCTS

2.1 FIRE-RESISTIVE JOINT SYSTEMS

A. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by fire-resistive joint system manufacturer based on testing and field experience.

B. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials. Use only components specified by fire-resistive joint system manufacturer and approved by the testing and inspecting agency.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of work.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:

   1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
   2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such. Remove tape as soon as possible

without disturbing fire-resistive joint system's seal with substrates or damaging adjoining surfaces.

3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with Part 1 "Performance Requirements" Article and fire-resistive joint system manufacturer's written installation instructions for products and applications indicated.

B. Install forming/packing/backing materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings and forming/packing/backing materials as required to achieve fire-resistance ratings indicated.
2. Apply fill materials so they contact and adhere to substrates formed by joints.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

A. Inspecting of completed installations of fire-resistive joint systems shall take place in successive stages as installation of fire-resistive joint systems proceeds. Do not proceed with installation of joint systems for the next area until inspecting agency determines completed work shows compliance with requirements. Inspecting agency shall state in each report whether inspected fire-resistive joint systems comply with or deviate from requirements.

B. Remove and replace fire-resistive joint systems where inspections indicate that they do not comply with specified requirements.

C. Additional inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and fire-resistive joint systems comply with requirements.

3.5 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by joint system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or

deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.6 FIRE-RESISTIVE JOINT SYSTEM SCHEDULE

A. Designation System for Joints in or between Fire-Resistance-Rated Constructions: Alphanumeric systems listed in UL's "Fire Resistance Directory" under Product Category XHBN.

B. Designation System for Joints at the Intersection of Head-of-Wall; Alphanumeric systems listed in UL's "Fire Resistance Directory" under Product Category XHDG:

C. Head-of-Wall Fire-Resistive Joint Systems: Standard Gypsum Board Wall.

1. Available UL-Classified Systems: HW-D-0049.
2. Assembly Rating: 2 hours, or as indicated on Drawings.
3. Nominal Joint Width: As indicated.
4. Movement Capabilities: 50 percent compression or extension.

END OF SECTION 07 8446

SECTION 07 9200
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes joint sealants for the following applications:

1. Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
2. Exterior joints in horizontal traffic surfaces.
3. Interior joints in vertical surfaces and horizontal nontraffic surfaces.
4. Interior joints in horizontal traffic surfaces.
5. Solvent-release-curing joint sealants.

B. See Division 32 Section "Concrete Paving Joint Sealants" for sealing joints in pavements, walkways, and curbing.

1.2 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

1.4 QUALITY ASSURANCE

A. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates according to the method in ASTM C 1193 that is appropriate for the types of Project joints.

B. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:

1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

1.5 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

C. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

D. Multicomponent Nonsag Neutral-Curing Silicone Sealant:

1. Available Products:

a. Dow Corning Corporation; 756 H.P.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

a. Use O joint substrates: Color anodic aluminum, aluminum coated with a high performance coating, galvanized steel, brick, ceramic tile.

E. Single-Component Mildew-Resistant Acid-Curing Silicone Sealant:

1. Available Products:

a. Dow Corning Corporation; 786 Mildew Resistant.
b. GE Silicones; Sanitary SCS1700.
c. Tremco; Tremsil 200 White.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.

F. Mildew-Resistant Acid-Curing Silicone Joint Sealant: ASTM C 920.

1. Manufacturers:

a. BASF Building Systems; Omniplus.
b. Dow Corning Corporation; 786 Mildew Resistant.
c. GE Advanced Materials - Silicones; Sanitary SCS1700.
d. Pecora Corporation.
e. Sika Corporation; Construction Products Division.
f. Tremco Incorporated; Tremsil 200 Sanitary.

2. Type: Single component (S).
3. Grade: Nonsag (NS).
4. Class: 25.
5. Uses Related to Exposure: Nontraffic (NT).
6. Applications: Wet and high humidity locations: Toilet rooms, kitchens.

2.4 LATEX JOINT SEALANTS

A. Latex Sealant: Comply with ASTM C 834, Type O P, Grade NF.

B. Available Products:

1. Pecora Corporation; AC-20+.
2. Sonneborn, Division of ChemRex Inc.; Sonolac.
3. Tremco; Tremflex 834.

2.5 SOLVENT-RELEASE-CURING JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealant: ASTM C 1311.

1. Products:

a. Bostik, Inc.; Chem-Calk 300.
b. Pecora Corporation; BC-158.
c. Tremco Incorporated; Tremco Butyl Sealant; JS733 Non-Curing Butyl Sealant.

2. Locations: Exterior threshold bedding; metal roof panel ribs (concealed applications).

2.6 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material), B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.

    a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

2. Remove laitance and form-release agents from concrete.

    a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

F. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 07 9200

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 01 Section "General Conditions".
2. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
3. Division 08 Section “Flush Wood Doors”.
4. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
5. Division 08 Section "Door Hardware".
6. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40” above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
3. Smoke Control Door Assemblies: Comply with NFPA 105.

    a. Smoke "S" Label: Doors to bear “S” label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Energy Efficient Exterior Openings: Comply with minimum thermal ratings, based on ASTM C1363. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.

1. Thermal Performance (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:

a. Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.37, R-Value 2.7, including insulated door, thermal-break frame and threshold.

2. Air Infiltration (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283 to meet or exceed the following requirements:

a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.6 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:

1. CECO Door Products (C).
2. Curries Company (CU).

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.

1. Design: Flush panel.
2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 “Laminated Core”.

    a. Provide 22-gauge steel stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
    b. Thermal properties to rate at a fully operable minimum U-Factor 0.37 and R-Value 2.7, including insulated door, thermal-break frame and threshold.
    c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.

3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053 inch - 1.3-mm) thick steel, Model 2.
4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors (Energy Efficient): Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A366 or 620. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Steel stiffened laminated core with fiberglass filler with no stiffener face welds, in compliance with HMMA 867 “Laminated Core”.

    a. Provide 22-gauge steel-stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, no stiffener face welding is permitted.
    b. Acoustical sound transmission rating shall be no less than STC 38 complying with ASTM E 90 and must be visible on factory applied labels.

3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.

4. Vertical Edges: Vertical edges–to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:

1. Curries Company (CU) - Energy Efficient - 777 Trio-E Series.

2.4 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
3. Manufacturers Basis of Design:

    a. Curries Company (CU) - M Series.

C. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
3. Manufacturers Basis of Design:

    a. Curries Company (CU) - CM Series.
    b. Curries Company (CU) - M Series.

D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.6 LOUVERS

A. Metal Louvers: Unless otherwise indicated provide louvers to meet the following requirements.

1. Blade Type: Vision proof inverted V or inverted Y.
2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

B. Louvers for Fire Rated Doors: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire protection rating of 1-1/2 hours and less.

1. Manufacturers: Subject to compliance with requirements, provide louvers to meet rating indicated.
2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

2.7 LIGHT OPENINGS AND GLAZING

A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.

C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.

D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.9 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches on-center and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

    b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance

with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.10 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

E. Verify tolerances against manufacturers installations instructions for tornado and hurricane storm shelter openings.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

    a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

END OF SECTION 08 1113

SECTION 08 1416
FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with wood veneer faces.
2. Factory fitting flush wood doors to frames and factory machining for hardware.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door indicated. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Indicate dimensions and locations of mortises and holes for hardware.
2. Indicate dimensions and locations of cutouts.
3. Indicate requirements for veneer matching.
4. Indicate doors to be factory finished and finish requirements.

C. Samples: For factory-finished doors.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Algoma Hardwoods, Inc.
2. Buell Door Company Inc.
3. Chappell Door Co.
4. Eggers Industries.
5. Marshfield Door Systems, Inc.
6. Oshkosh Architectural Door Company.
7. Poncraft Door Company.

8. Vancouver Door Company.
9. VT Industries Inc.

2.2 DOOR CONSTRUCTION, GENERAL

A. Particleboard-Core Doors:

1. Particleboard: ANSI A208.1, Grade LD-1 or Grade LD-2 , made with binder containing no urea-formaldehyde resin.
2. Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
3. Provide doors with either glued-wood-stave or structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.

2.3 WOOD VENEER DOORS FOR TRANSPARENT FINISHES

A. Interior Solid-Core Doors:

1. Grade: Custom (Grade A faces).
2. Species: Select White Birch. Color – Ravine RA18.
3. Cut: Plain sawn.
4. Match between Veneer Leaves: Slip match.
5. Assembly of Veneer Leaves on Door Faces: Center and balance match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Core: Particleboard.
8. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Factory machine doors for hardware that is not surface applied.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing.

B. Complete fabrication, including factory fitting doors for openings and machining for hardware that is not surface applied.

C. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

D. Finish doors in field, or local shop, that are indicated to receive transparent finish. Match existing stain, if any, and finish sheen.

E. Transparent Finish:

1. Grade: Premium.
2. Finish: AWI conversion varnish or catalyzed polyurethane comparable to TR-6 catalyzed polyurethane system.
3. Staining: Selected by Architect from fabricator's full range.
4. Sheen: Satin, or low gloss.
5. Samples, provide a 3 samples showing typical range of finish to Owner and Architect to verify selection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hardware: For installation, see Section 08 7100 "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 08 1416

SECTION 08 3300

ROLLING SERVICE DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Insulated rolling service doors.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Support framing and framed opening.

B. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.

C. Section 09900 - Painting: Field applied finish.

D. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.

E. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

A. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors And Rolling Doors: Determination Of Structural Performance Under Uniform Static Air Pressure Difference.

B. NFRC 102 - Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems.

C. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.

D. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

E. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

F. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

G. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

H. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

J. NEMA MG 1 - Motors and Generators.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Details of construction and fabrication.
4. Installation instructions.

C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION

A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

1.10 WARRANTY

A. Warranty: Manufacturer’s limited door and operator system, except the counterbalance spring and finish, to be free from defects in materials and workmanship for 3 years or 20,000 cycles, whichever occurs first.

B. Warranty: Manufacturer’s limited door system warranty for 2 years for all parts and components.

C. PowderGuard Finish
1. PowderGuard Premium Applied to curtain, guides, bottom bar, headplates: Manufacturer’s limited Premium Finish warranty for 2 years.
2. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Premium applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer’s limited Zinc Finish warranty for 4 years.
3. PowderGuard Textured: Applied to curtain, guides, bottom bar, headplates: Manufacturer’s limited Textured Finish warranty for 3 years.
4. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Textured applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer’s limited Zinc Finish warranty for 4 years.
5. PowderGuard Max: Applied to curtain, guides, bottom bar, headplates: Manufacturer’s limited Max Finish warranty for 5 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corporation, 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com.

B. Substitutions: Permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 INSULATED ROLLING SERVICE DOORS

A. Stormtite Advanced Performance Insulated Rolling Service Doors: Overhead Door Corporation Stormtite AP Model 627.
   1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
      a. Flat profile type FIT-265 for doors up to 40 feet (12.19 m) wide.
      b. Front slat fabricated of:
         1) 24 gauge galvanized steel.
      c. Back slat fabricated of:
         1) 24 gauge galvanized steel.
      d. Slat cavity filled with CFC-free foamed-in-place, polyurethane insulation.
         1) R-Value: 10.9, U-Value: 0.09.
   2. Performance:
      a. Through Curtain Sound Rating: Sound Rating: STC-28 (STC-30+ with HZ noise generator) as per ASTM E 90.
      b. Installed System Sound Rating: STC-21 as per ASTM E 90.
      c. U-factor: 0.84 NFRC test report, maximum U-factor of no higher than 1.00.
      d. Air Infiltration: Meets ASHRAE 90.1 and IECC 2012/2015 C402.4.3 Air leakage <1.00 cfm/ft2.
   3. Slats and Hood Finish:
      a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.
         1) Polyester Top Coat.
            (a) White polyester.
         2) Powder Coat:
            (a) PowderGuard Premium powder coat color as selected by the Architect.
         3) Finish: Mill finish.
         4) Finish: Powder Coat:
   4. Weatherseals:
      a. Vinyl bottom seal and internal hood seals.
      b. Interior and exterior EPDM triple-seal finned guide weatherseal.
      c. Air Infiltration Package: IECC 2012/2015 listed; product to meet C402.4.3 2012 Air leakage <1.00 cfm/ft2.

1) Air infiltration perimeter seal package includes: guide cover, guide cap, PVC weatherseal on exterior of guide, EPDM triple finned weatherseal on interior of guide, lintel weatherseal and vinyl bottom seal.

5. Bottom Bar:
   a. Two powder coated black steel angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides.
   b. Two galvanized steel angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides.
   c. Two stainless steel angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides.
   d. Two aluminum angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides.
6. Guides: Three structural steel angles.
7. Brackets:
   a. Galvanized steel to support counterbalance, curtain and hood.
8. Finish; Guides, Headplate and Brackets:
   a. PowderGuard Premium powder coat in black color.
9. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
10. Hood: Provide with internal hood baffle weatherseal.
    a. 24 gauge galvanized steel with intermediate supports as required.
11. Manual Operation:
    a. Chain hoist.
12. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
    a. Sensing Edge Protection:
       1) Pneumatic sensing edge.
    b. Operator Controls:
       1) Push-button and key operated control stations with open, close, and stop buttons.
       2) Controls for interior location.
       3) Controls surface mounted.
    c. Special Operation:
       1) Vehicle detector operation.
    d. Motor Voltage: 115/230 single phase, 60 Hz.
13. Wind Load Design:
    a. Standard wind load shall be 20 PSF.
14. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.
15. Locking:
    a. Chain keeper locks for chain hoist operation.
    b. Interior slide bolt lock for electric operation with interlock switch.
    c. Cylinder lock for electric operation with interlock switch.
16. Wall Mounting Condition:
    a. Face-of-wall mounting.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

G. Install perimeter trim and closures.

H. Instruct Owner’s personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Protect installed products until completion of project.

END OF SECTION

SECTION 08 3320
ROLLING COUNTER DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Rolling Counter Doors, manually operated.

1.2 RELATED SECTIONS

A. Section 05 500 - Metal Fabrications: Support framing and framed opening.

B. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.

C. Section 09900 - Painting: Field applied finish.

D. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.

E. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

D. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

E. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

G. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.

H. NEMA MG 1 - Motors and Generators.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Details of construction and fabrication.
4. Installation methods.

C. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent construction.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weathertight location.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 COORDINATION

A. Coordinate Work with other operations and installation of adjacent finish materials to avoid damage to installed materials.

1.9 WARRANTY

A. Warranty: Manufacturer’s limited door warranty for 2 years for all parts and components.

B. PowderGuard Finish.
   1. PowderGuard Premium Applied to curtain, guides, bottom bar, headplates: Manufacturer’s limited Premium Finish warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corporation, 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone:
(469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com.
E- mail: info@overheaddoor.com.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 ROLLING STEEL COUNTER DOORS

A. Galvanized Steel Counter Doors: Overhead Door Corporation, 650 Series.
   1. Wall Mounting Condition:
      a. Face-of-wall mounting.
   2. Curtain: Interlocking slats, Type F-158 fabricated of 22 gauge galvanized

steel. Endlocks attached to alternate slats to maintain curtain alignment and prevent lateral slat movement.

3. Finish:
   a. Slats and hood galvanized steel in accordance with ASTM A 653 with rust-inhibitive, roll coating process, including 0.2 mils thick baked- on prime paint, and 0.6 mils thick baked-on polyester (powder coated) top coat.
      1) Polyester Top Coat.
         (a) Gray polyester.
         (b) Tan polyester.
   b. Non-galvanized exposed ferrous surfaces for guides, bottom bar and head plates shall receive one coat of rust-inhibitive primer.
4. Bottom Bar:
   a. Steel tubular locking bottom bar with weatherstrip.
5. Guides: Extruded aluminum.
6. Brackets: Steel plate to support counterbalance, curtain and hood.
7. Finish; Bottom Bar, Guides, Brackets:
   a. Finish: PowderGuard Premium powder coat, color as selected by the Architect.
8. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel.
9. Hood: Provided with intermediate support brackets as required and fabricated of:
   a. Stainless steel.
10. Operation:
    a. Manual push up.
11. Locking:
    a. Slide bolt locks suitable for use with padlock.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

F. Install perimeter trim and closures.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Protect installed products until completion of project.

END OF SECTION

SECTION 08 4113
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior and interior storefront framing.

1.2 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:

1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
2. Dimensional tolerances of building frame and other adjacent construction.
3. Failure includes the following:

    a. Deflection exceeding specified limits.
    b. Thermal stresses transferring to building structure.
    c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
    d. Noise or vibration created by wind and by thermal and structural movements.
    e. Loosening or weakening of fasteners, attachments, and other components.

B. Wind Loads: As indicated on Drawings.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below them to less than 1/8 inch and clearance between members and operable units directly below them to less than 1/16 inch.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding **0.2** percent of span.
2. Test Durations: 10 seconds.

E. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft..

F. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.

C. Samples: For each type of exposed finish required.

D. Other Action Submittals:

1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Warranties: Sample of special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by

dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

D. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

E. Preinstallation Conference: Conduct conference at Project site.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer.

B. Systems:

1. Punched Windows: 2 by 4-1/2 inches, thermal break; screw-spline system; 1 inch glazing, center set.
2. Exterior Storefront: 2 by 6 inches, thermal break, for exterior storefront and entrance frames; screw-spline system; 1 inch glazing, center set.
3. Interior Storefront: 2 by 4-1/2 inches, for interior windows and storefront systems; screw spline system. ¼ inch glazing, center set.

C. Other Available Manufacturer:

1. Arch Aluminum & Glass Co., Inc.
2. CMI Architectural.

3. EFCO Corporation.
4. Kawneer.
5. Manco, Inc.
6. United States Aluminum.
7. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.
8. Wausau Window and Wall Systems.
9. Tubelite

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.
5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction, Interior: Nonthermal
2. Construction Exterior: Thermally broken.
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Center, unless otherwise indicated for front glazed.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads , fabricated from stainless steel.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

E. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

G. Sill Flashing: Manufacturer's standard sill flashing sized to match framing system. Provide with sealed or brazed end dams.

H. Framing Components:

1. Sill Flashing: with sealed end dams.
2. Sill Member.
3. Horizontal Mullions.
4. Head.
5. Jamb.
6. Vertical Mullion.
7. Other components as required for a complete installation, and weathertight for exterior conditions

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Section 08 8000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.5 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: Wide stile; 5-inch nominal width, except bottom rail: Smooth surfaced for width of door in area within 10 inches above floor or ground plane.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

2.6 ENTRANCE DOOR HARDWARE

A. General: Provide entrance door hardware for each entrance door, except as indicated in Section 08 7101 "Door Hardware Schedule."

1. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
2. Opening-Force Requirements:

    a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbft to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
    b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

3. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force of not more than 15 lbf for not more than 3 seconds.

B. Butt Hinges: BHMA A156.1, Grade 1, square corner.

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while entrance door is closed.
2. Exterior Hinges: Stainless steel, with stainless-steel pin.
3. Quantities:

    a. For doors up to 87 inches high, provide 3 hinges per leaf.

C. Mortise Auxiliary Locks: BHMA A156.5, Grade 1. As specified in Division 08 Section “Door Hardware.”

D. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.

E. Panic Exit Devices: Provided by door supplier, except as specified in Division 08 Section “Door Hardware.”

F. Cylinders: As specified in Division 08 Section "Door Hardware."

1. Keying: Master key system. Permanently inscribe each key with a visual key control number and include notation "DO NOT DUPLICATE".

G. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

H. Operating Trim: BHMA A156.6.

I. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to meet field conditions and requirements for opening force. Provided by door suppliers, except as specified in Division 08 Section “Door Hardware.”

J. Surface-Mounted Holders: BHMA A156.16, Grade 1.

K. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper. Provided by door suppliers, except as specified in Division 08 Section “Door Hardware.”

L. Weather Stripping: Manufacturer's standard replaceable components.

M. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

N. Silencers: BHMA A156.16, Grade 1.

O. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.7 ACCESSORY MATERIALS

A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from exterior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

A. Provide components with the following aluminum finishes in locations indicated on the Drawings.

B. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Section 088000 "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.2 FIELD QUALITY CONTROL

A. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.

1. Water Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

B. Repair or remove work if test results and inspections indicate that it does not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION 08 4113

SECTION 08 4413
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section covers Kawneer Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

B. Related Sections:

1. 07 9200: Joint Sealants

2. 08 4113: Aluminum-Framed Entrances and Storefronts

3. 08 8000: Glazing

1.3 DEFINITIONS

A. For fenestration industry standard terminology and definitions, refer to the American Architectural Manufacturers Association Glossary (AAMA AG-13).

B. Wind Loads:

1. The curtain wall system shall include anchorage that is capable of withstanding the following wind load design pressures:

2. The design pressures are based on the IBC Building Code, 2015 Edition.

C. Air Leakage:

1. Air infiltration rate shall not exceed 0.06 cfm/ft^2 (0.3 l/s · m^2) at a static air pressure differential of 6.2 psf (300 Pa).

D. Water Resistance:

1. Static:

a. The test specimen shall be tested in accordance with TAS 202 and ASTM E 331.

b. There shall be no leakage at a minimum static air pressure differential of 15 psf (720 Pa) as defined in AAMA 501.

2. Dynamic:

a. The test specimen shall be tested in accordance with AAMA 501.1.

b. There shall be no leakage at an air pressure differential of 15 psf (720 Pa) as defined in AAMA 501.

c. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation.

d. Water leakage does not include water controlled by flashing and gutters that is drained to exterior.

E. Structural-Test Performance:

1. Test according to ASTM E 330 and TAS 202.

2. When tested at positive and negative wind load design pressures, assemblies do not evidence deflection exceeding L/175 of clear span.

3. A static air design load of 40 psf (1915 Pa) shall be applied in the positive and negative direction.

a. When tested at 150% of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2% percent of clear span.

b. Minimum test duration according to ASTM E 330 is 10 seconds.

F. Structural-Test Performance:

1. Based on Aluminum Association “Specification for Aluminum Structures” or CSA CAN3-S157 “Strength Design in Aluminum”.

2. There shall be no deflection exceeding L/175 of the span of any framing member at design load.

G. Deflection of Framing Members at Design Wind Pressure:

1. Deflection Normal to Wall Plane:

a. Limited to edge of glass in a direction perpendicular to glass plane not exceeding L/175 of the glass edge length for each individual glazing lite, or an amount that restricts edge deflection of individual glazing lites to 3/4" (19 mm), whichever is less.

2. Deflection Parallel to Glazing Plane:

    a. Operable Units - Provide a minimum 1/16-inch (1.6 mm) clearance between framing members and operable units.

    b. Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm)

3. Cantilever Deflection:

    a. Where framing members overhang an anchor point, limit deflection to two times the length of cantilevered member, divided by 175.

H. Thermal Movements:

1. Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures:

    a. Temperature Change (Range): 120 °F (49 °C), ambient; 180 °F (82 °C), material surfaces.

    b. Test Interior Ambient Air Temperature: 75 °F (24 °C).

    c. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performancewhen tested according to AAMA 501.5 .

I. Seismic Story Drift:

1. Accommodate design displacement of adjacent stories indicated:

    a. Design Displacement: Shall not exceed 1% of story height.

    b. Test Performance: Meeting criteria for passing based on building occupancy type when tested according to AAMA 501.4 at design displacement and 1.5 times the design displacement.

J. Thermal Transmittance (U-factor), Physical Test:

1. Thermal transmittance test results in accordance with AAMA 1503 are based upon 1-1/8" (28.6 mm) low-emissivity coated glass insulating unit, e=0.04 #2, air filled, with aluminum spacer.

K. Thermal Transmittance (U-factor), Simulation:

1. Clearwall® (SBI/SBIT): When simulated using NFRC 100 or AAMA 507, the U-factor shall not be more than 0.27 Btu/(hr·ft^2·°F) or project specific Btu/(hr·ft^2·°F) per AAMA 507 or Btu/(hr·ft^2·°F) per NFRC 100.

L. Condensation Resistance Factor (CRF) or Temperature Index (TI):

1. If using CRF, when tested using AAMA 1503, the CRF_{frame} and CRF_{glass} (with low-emissivity glazing) shall not be less than 78 and 61 respectively for Clearwall® SS.

2. If using TI, when tested to CSA A440-00, the the TI_{frame} and TI_{glass} (with low-emissivity glazing) shall not be less than 74 and 56 respectively for Clearwall® SS.

M. Solar Heat Gain Coefficient:

1. Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than as determined according to NFRC 200.

N. Sound Transmission Loss:

1. Provide glazed aluminum curtain walls with fixed glazing and framing areas having the following sound-transmission characteristics:

a. Clearwall® (SS): STC 33 or OITC 28 when tested for laboratory sound transmission loss according to ASTM E 90 and ASTM E 1425, and based on 1-1/8" (28.6 mm) insulating glass (1/4", 5/8" AS, 1/4").

b. Clearwall® (SSI): STC 37 or OITC 30 when tested for laboratory sound transmission loss according to ASTM E 90 and ASTM E 1425, and based on 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4" laminated).

O. Windborne-Debris-Impact Resistance Performance:

1. Performance shall be tested in accordance with ASTM E1886 and information in ASTM E1996:

a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade

b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade

P. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

1.4 SUBMITTALS

A. Product Data:

1. For each type of product indicated, include:

a. Construction details

b. Material descriptions

c. Dimensions of individual components and profiles

d. Finishes

2. Recycled Content:

a. Provide a sample document illustrating project-specific information that will be provided after product shipment.

b. After product has shipped, provide project-specific recycled content information:

1) Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.

2) Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.

3) Indicate the location for recovery of recycled content.

4) Indicate the location of the manufacturing facility.

3. Environmental Product Declaration (EPD):

a. Include a Type III Product-Specific EPD created from a Product Category Rule.

B. Shop Drawings:

1. Plans

2. Elevations

3. Sections

4. Full-size details

5. Attachments to other work

C. Samples for Initial Selection:

1. Provide samples for units with factory-applied color finishes.

D. Samples for Verification:

1. Provide a verification sample for each type of exposed finish required, in manufacturer's standard sizes.

E. Product Test Reports:

1. Provide test reports for glazed aluminum curtain walls.

2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.

3. Test reports must indicate compliance with performance requirements.

F. Fabrication Sample:

1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed curtain wall systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:

a. Joinery

b. Glazing

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have successfully installed the same or similar systems required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:

1. Manufacturer must be capable of fabricating glazed aluminum curtain walls that meet or exceed the stated performance requirements.

C. Source Limitations:

1. Obtain aluminum curtain wall system through one source from a single manufacturer.

D. Product Options:

1. Information on drawings and in specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups:

1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

2. Build mockups for the type(s) of curtain wall elevation(s) indicated, in location(s) shown on drawings.

F. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.6 PROJECT CONDITIONS

A. Field Measurements:

1. Verify actual locations of structural supports for glazed aluminum curtain walls by field measurements before fabrication.

2. Indicate measurements on shop drawings.

1.7 WARRANTY

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product:

1. Kawneer Company, Inc.

2. 1600 Wall System®2 Curtain Wall

a) Sight line: 2-1/2" (63.5 mm)

b) Structural silicone glazed (SSG)

c) System depth: 7-1/2" (190.5mm)

3. Test to AAMA 501-05 and TAS 202

B. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.

2. Pre-Contract (Bidding Period) Substitutions:

    a. Submit written requests ten (10) days prior to bid date.

3. Post-Contract (Construction Period) Substitutions:

    a. Submit written request in order to avoid installation and construction delays.

4. Product Literature and Drawings:

    a. Submit product literature and drawings modified to suit specific project requirements and job conditions.

5. Certificates:

    a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for curtain wall system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum curtain walls for a period of not less than ten (10) years. (*Company Name*).

6. Test Reports:

    a. Submit test reports verifying compliance with each test requirement required by the project.

7. Samples:

    a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

C. Substitution Acceptance:

1. Acceptance will be in written form, either as an addendum or modification.

2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

A. Aluminum Extrusions:

1. Alloy and temper recommended by glazed aluminum curtain wall manufacturer for strength, corrosion resistance, and application of required finish

2. Not less than 0.070" (1.8 mm) wall thickness at any location for the main frame

3. Complying with ASTM B221: 6063-T6 alloy and temper

B. Aluminum Sheet Alloy:

1. Shall meet the requirements of ASTM B209.

C. Fasteners:

1. Aluminum, nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.

D. Anchors, Clips, and Accessories:

1. Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.

2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.

E. Reinforcing Members:

1. Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.

2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.

F. Sealant:

1. For sealants required within fabricated curtain wall system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

G. Tolerances:

1. References to tolerances for wall thickness and other cross-sectional dimensions of glazed curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

2.3 CURTAIN WALL FRAMING

A. Framing Members:

1. Manufacturer's standard extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads

2. Glazing System: Retained mechanically with toggles on four sides

3. Glazing Plane: Front

B. Brackets and Reinforcements:

1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.

C. Framing Sealants:

1. Shall be suitable for glazed aluminum curtain wall as recommended by sealant manufacturer.

D. Fasteners and Accessories:

1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.

2. Where exposed, fasteners and accessories shall be stainless steel.

3. Toggle Assembly: As tested by manufacturer.

E. Perimeter Anchors:

1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

F. Packing, Shipping, Handling, and Unloading:

1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

G. Storage and Protection:

1. Store materials so that they are protected from exposure to harmful weather conditions.

2. Handle material and components to avoid damage.

3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

2.4 GLAZING

A. Glazing to meet requirements in Division 08 Glazing Section.

B. Glazing Gaskets:

1. Gaskets to meet requirements of ASTM C864.

C. Spacers and Setting Blocks:

1. Manufacturer's standard elastomeric type

D. Bond-Breaker Tape:

1. Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing Sealants:

1. As recommended by manufacturer for joint type.

2.5 OPERABLE UNITS

A. Doors comply with Division 08 Aluminum-Framed Entrances and Storefronts Section.

B. Windows comply with Division 08 Aluminum Windows Section.

2.6 ACCESSORY MATERIALS

A. Bituminous Paint:

1. Cold-applied asphalt-mastic paint

2. Complies with SSPC-Paint 12 requirements except containing no asbestos

3. Formulated for 30-mil (0.762 mm) thickness per coat

2.7 FABRICATION

A. Extrude or form aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations

2. Accurately fitted joints

3. Physical and thermal isolation of glazing from framing members

4. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances

5. Provisions for field replacement of glazing from exterior

6. Fasteners, anchors, and connection devices that are concealed from view to the greatest extent possible

7. Internal weeping system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior

8. Double seal design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.

C. Curtain Wall Framing:

1. Fabricate components for assembly using shear block system following manufacturer's standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

2.8 ALUMINUM FINISHES

A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:

1. Kawneer Permanodic® AA-M10C21A44 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating Color Black

2.9 EXAMINATION

A. With installer present, examine areas for compliance with requirements for installation tolerances and other conditions affecting performance of the work.

B. Proceed with installation only after correcting unsatisfactory conditions.

2.10 INSTALLATION

A. Curtain Wall System Installation:

1. Install curtain wall systems plumb, level, and true to line, without warp or rack of frames, within manufacturer's prescribed tolerances, and complying with installation instructions.

2. Provide support and anchor in place.

3. Dissimilar Materials:

a. Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

4. Glazing:

a. Glass shall be outside-glazed.

b. Glass shall be held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners that are spaced no more than 9" (228.6 mm) on center.

5. Water Drainage

a. Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations.

b. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

B. Related Products Installation:

1. Sealants (Perimeter):

a. Refer to Joint Treatment (Sealants) Section.

2. Glass:

a. Refer to Glass and Glazing Section.

b. Reference: ANSI Z97.1, CPSC 16 CFR 1201, and GANA Glazing Manual.

2.11 FIELD QUALITY CONTROL

A. Field Tests:

1. Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter-caulked, and cured.

2. Conduct tests for air infiltration and water penetration with manufacturer's representative present.

3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.

4. Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.

5. Air Infiltration Tests:

a. Conduct tests in accordance with ASTM E 783.

b. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2, whichever is greater.

6. Water Infiltration Tests:

a. Conduct tests in accordance with ASTM E 1105.

b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 psf (383 Pa).

B. Manufacturer's Field Services:

1. Upon owner's written request, provide periodic site visit by manufacturer's field service representative.

2.12 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting: Not applicable.

B. Protection:

1. Protect installed product's finish surfaces from damage during construction.

2. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

C. Cleaning:

1. Repair or replace damaged installed products.

2. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

4. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 08 4413

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

    a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
    b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

    a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

    a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

    a. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

    a. Pemko (PE).

2.4 POWER TRANSFER DEVICES

A. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

    a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
    b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. McKinney (MK) - QC-C Series.

2.5 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Rockwood (RO).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Rockwood (RO).

2.6 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.

5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Manufacturer’s Standard.

C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).

F. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.7 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).

2.8 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.
b. Sargent Manufacturing (SA) - 8200 Series.
c. No Substitution.

2.9 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide exit devices with functions and features as follows:

   a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
   b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
   c. No catch points: addition of applied deflectors or other added components are not allowed.
   d. No visible plastic.
   e. Heavy duty end caps with flush and overlapping options made of stainless steel, brass, or bronze with architectural finishes.
   f. Constructed of all stainless steel.
   g. Stainless steel pullman type latch with deadlock feature.
   h. Narrow or wide style exterior trim as specified in the hardware sets.
   i. Center case adjustability on concealed vertical rod exit devices; single operation with hex key individually adjusts top or bottom latches. No retainer screws or clips required to maintain adjustment.
   j. Ten-year limited warranty for mechanical features.

2. Electromechanical exit devices shall have the following functions and features:

   a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
   b. Wire routing for all non-access control electromechanical functions and EcoFlex trim to be contained within the carrier of the device eliminating the need for cavities in doors to be drilled. Include a protective film so that wires don't get damaged if the rail needs to be removed.
   c. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
   d. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.
   e. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.

3. Manufacturers:

   a. Corbin Russwin Hardware (RU) - PED4000 / PED5000 Series.
   b. Sargent Manufacturing (SA) - PE80 Series.
   c. No Substitution.

2.11 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC8000 Series.
b. Norton Rixson (NO) - 9500 Series.
c. Sargent Manufacturing (SA) - 281 Series.
d. No Substitution.

C. Door Closers, Surface Mounted (Unitrol): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted closers with door stop mechanism to absorb dead stop shock on arm and top hinge. Hold-open arms to have a spring loaded mechanism in addition to shock absorber assembly. Arms to be provided with rigid steel main arm and secondary arm lengths proportional to the door width.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - Unitrol Series.
b. Norton Rixson (NO) - Unitrol Series.
c. No Substitution.

2.12 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Rockwood (RO).

2.13 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Rockwood (RO).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. Norton Rixson (RF).

2.14 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and

provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).

2.15 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Securitron (SU) - DPS Series.

B. Intelligent Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Manufacturers:

a. Securitron (SU) - AQL Series.

2.16 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.17 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.5 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.6 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.7 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RO - Rockwood
4. RU - Corbin Russwin
5. RF - Rixson
6. NO - Norton
7. SU - Securitron
8. OT - Other

Hardware Sets

Set: 1.0
Doors: 117A
Description: Ext Alum Pair - Access Control

1	Continuous Hinge	CFM__SLI-HD1		PE
1	Continuous Hinge	CFM__SLI-HD1 SER		PE
1	Mullion	CRAL608	628	RU
1	Rim Exit Device, Exit Only	PED4201 EO	630	RU
1	Rim Exit Device, ELR/RX	PED4257 MELR K157ET M92 C7S	630	RU
2	Door Pull	RM3311-12 Mtg-Type 1XHD	US32D	RO
2	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
1	Rain Guard	346A		PE
1	Gasketing (Mullion)	5110BL		PE
2	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE
1	ElectroLynx Harness - Door	QC-C***		MK
1	ElectroLynx Harness - Frame	QC-C1500P		MK
2	Position Switch	DPS-M-GY		SU
1	Power Supply	AQLxx		SU

Notes: Door normally latched and secured by exit device. Authorized swipe (card reader under security section) will temporarily retract the latchbolt allowing entry. Door position switch monitors the opening for door prop or force open. Request to exit switch in the exit device rail shunts door position alarm. Door defaults to locked upon loss of power. Cylinder over-ride provided.
Gasketing by storefront mfgr.

Set: 2.0
Doors: 010C, 117B
Description: Ext Alum Pair

2	Continuous Hinge	CFM__SLI-HD1		PE
1	Mullion	CRAL608	628	RU
1	Rim Exit Device, Exit Only	PED4201 EO	630	RU
1	Rim Exit Device, Nightlatch	PED4257 K157ET C7S	630	RU
2	Door Pull	RM3311-12 Mtg-Type 1XHD	US32D	RO
2	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
1	Rain Guard	346A		PE
1	Gasketing (Mullion)	5110BL		PE
2	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE

Notes: Gasketing by storefront mfgr.

Set: 3.0
Doors: 105B
Description: Ext HM Pair - Kitchen

6	Hinge, Full Mortise	TA2314 NRP 4-1/2" x 4-1/2"	US32D	MK
2	Flush Bolt	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	ML2057 NSA M26 C7S	626	RU
1	Closer w/ Hvy Arm	PR9500 SN-134	689	NO
2	Kickdown Stop	461	US26D	RO
2	Astragal	18041CNB		PE
1	Gasketing	290APK		PE
1	Rain Guard	346A		PE
2	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE

Notes: Closer @ active leaf.
Special templating for 180 deg swing.

Set: 4.0
Doors: 010A
Description: Ext Access Control

2	Hinge, Full Mortise, Hvy Wt	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1	Hinge, Full Mortise, Hvy Wt	T4A3386 QC 4-1/2" x 4-1/2"	US32D	MK
1	Elec Exit - ELR/RX	PED5257 MELR K157ET M92 C7S	630	RU
1	Pull	RM201	US32D	RO
1	Closer w/ Spring Stop	UNI9500 SN-134	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	290APK		PE
1	Rain Guard	346A		PE
1	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE
1	ElectroLynx Harness - Door	QC-C***		MK
1	ElectroLynx Harness - Frame	QC-C1500P		MK
1	Position Switch	DPS-M-GY		SU
1	Power Supply	AQLxx		SU
1	Card Reader	By Security.		OT

Notes: Door normally latched and secured by exit device. Authorized swipe (card reader under security section) will temporarily retract the latchbolt allowing entry. Door position switch monitors the opening for door prop or force open. Request to exit switch in the exit device rail shunts door position alarm. Door defaults to locked upon loss of power. Cylinder over-ride provided.

Set: 5.0
Doors: 101B
Description: Ext HM - Dock

3	Hinge, Full Mortise, Hvy Wt	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1	Rim Exit Device - Nightlatch	PED5247 N947PT C7S	630	RU
1	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	290APK		PE
1	Rain Guard	346A		PE
1	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE

Set: 6.0
Doors: 119B, 119C
Description: Ext HM - Exising

1	Continuous Hinge	CFS__HD1		PE
1	Rim Exit Device, Nightlatch	PED5257 K157ET C7S	630	RU
1	Pull	RM201	US32D	RO
1	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	290APK		PE
1	Rain Guard	346A		PE
1	Door Bottom	217APK		PE
1	Threshold	252x3AFG		PE
3	Hinge filler plates	Field verify		OT

Notes: GC / Supplier to verify existing openings requirements prior to ordering material. 128D will be a new door in an existing frame. 128C is existing door and frame.

Set: 7.0
Doors: 117C, 117D
Description: Pair Alum- Gym

2	Continuous Hinge	CFM__SLI-HD1		PE
1	Mullion	CRAL608	628	RU
1	Rim Exit Device - Classroom	PED4245 N845PT C7S	630	RU
1	Rim Exit Device - Dummy	PED4250 N850PT	630	RU
2	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO

Notes: Gasketing by storefront mfgr.

Set: 8.0
Doors: 009
Description: Pair - Storage

8	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Flush Bolt	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Flush Bolt	555-Per Door Hgt	US26D	RO
1	Storeroom Lock	ML2057 NSA C7S	626	RU
2	Surf Overhead Stop	9-336	630	RF
2	Silencer	608-RKW		RO

Set: 9.0
Doors: 110
Description: Corr Pair - Rated

6	Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1	Mullion	CR910BKM C7S		RU
1	Rim Exit Device - Classroom	PED5245 A N945PT C7S	630	RU
1	Rim Exit Device - Dummy	PED5250 A N950PT	630	RU
2	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
2	Kick Plate	K1050 10" CSK BEV	US32D	RO
2	Astragal	316AV		PE
1	Gasketing	S88BL		PE

Set: 10.0
Doors: 008, 013, 014
Description: Storage - Wall Stop - Closer

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	ML2057 NSA C7S	626	RU
1	Surface Closer	9500 SN-134	689	NO
1	Wall Stop	409	US32D	RO
3	Silencer	608-RKW		RO

Set: 11.0
Doors: 101
Description: Storage -- Closer - Stop Arm

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	ML2057 NSA C7S	626	RU
1	Surface Closer	CLP9500 SN-134	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	S88BL		PE

Set: 12.0
Doors: 106, 124
Description: Storage

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	ML2057 NSA C7S	626	RU
1	Wall Stop	409	US32D	RO
3	Silencer	608-RKW		RO

Set: 13.0
Doors: 011, 119A, 120, 122
Description: Storage - OHS

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	ML2057 NSA C7S	626	RU
1	Surf Overhead Stop	9-336	630	RF
3	Silencer	608-RKW		RO

Set: 14.0
Doors: 003, 123
Description: Storage - OHS - Wide

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK
1	Storeroom Lock	ML2057 NSA C7S	626	RU
1	Surf Overhead Stop	9-336	630	RF
3	Silencer	608-RKW		RO

Set: 15.0
Doors: 105A
Description: Kitchen

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Deadbolt	DL4113 C7S	626	RU
1	Push Plate	70E	US32D-316	
	RO			
1	Pull Plate	111x70C	US32D	RO
1	Surface Closer	9500 SN-134	689	NO
1	Wall Stop	409	US32D	RO
3	Silencer	608-RKW		RO

Set: 16.0
Doors: 113, 114
Description: Office

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Office Lock	ML2051 NSA C7S	626	RU
1	Wall Stop	409	US32D	RO
3	Silencer	608-RKW		RO

Set: 17.0
Doors: 115, 119A
Description: Office - OHS - Closer

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Office Lock	ML2051 NSA C7S	626	RU
1	Surf Overhead Stop	10-336	630	RF
1	Surface Closer	9500H SN-134	689	NO
3	Silencer	608-RKW		RO

Set: 18.0

Doors: 002A, 100A, 100B
Description: Stairs

3	Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1	Rim Exit Device - Passage	PED5210 A N810PT	630	RU
1	Closer w/ Spring stop	UNI9500 w/ Mtg Plate / Brckt as Req'd	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	S88BL		PE

Set: 19.0
Doors: 111
Description: Classroom

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Classroom Lock	ML2055 NSA C7S	626	RU
1	Surface Closer	CLP9500 SN-134	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
3	Silencer	608-RKW		RO

Set: 20.0
Doors: 107
Description: Sgl Restroom

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Privacy Lock w/ Indicator	ML2030 NSA V21	626	RU
1	Surface Closer	9500 SN-134	689	NO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88BL		PE

Set: 21.0
Doors: 006C, 006D, 007C, 007D
Description: Sgl Stall

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Privacy Lock	ML2030 NSA M26 V21	626	RU
1	Wall Stop	409	US32D	RO
1	Gasketing	S88BL		PE

Set: 22.0
Doors: 006A, 006B, 007A, 007B
Description: Shared Restroom

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK

1	Pull	RM301 Mtg-Type 1XHD	US32D	RO
1	Push Plate	70E	US32D	RO
1	Surface Closer	9500 SN-134	689	NO
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88BL		PE

Set: 23.0
Doors: 010B
Description: OH

1	All hardware by the	Overhead Door Supplier	OT

Set: 24.0
Doors: 104A
Description: Coiling

1	All hardware by the	Coiling Door Supplier	OT

END OF SECTION 087100

SECTION 08 8000
GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Interior doors view lites.
   2. Exterior Aluminum storefront glazing.
   3. Glazed Aluminum Curtain Wall.

1.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Design glass, including comprehensive engineering analysis by a qualified professional engineer, using the following design criteria:
   1. Design Wind Pressures: As indicated on Drawings.
   2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
   3. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
   4. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
   5. Probability of Breakage for Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
   6. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
   7. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
3. Test no fewer than **3** Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.4 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

1.5 QUALITY ASSURANCE

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA's "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall

indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F (250 deg C), and the fire-resistance rating in minutes.

D. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.6 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace deteriorated insulating-glass units.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

B. Strength:

1. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass for exterior applications.
2. Provide monolithic fully tempered glass is indicated for all interior applications.

2.2 MONOLITHIC-GLASS PRODUCTS

A. Safety Glazing: ASTM C 1036, Type I, Quality-Q3, Class I (clear) Clear fully tempered float glass. Thickness: 6 mm or ¼ inch as standard; provide safety glazing labeling.

2.3 INSULATING-GLASS TYPES

A. Glass Type: Low-e-coated, clear insulating glass.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Glass 1: Vitro Solorban 70 for clear on (IGDB) on Vitro Clear glass USA (IGDB)
4. Glass 2: Vitro Clear Glass USA (IGDB)
5. Interspace Content: Argon.
6. Low-E Coating: Sputtered on second surface.
7. Shading coefficient: 0.17.
8. Overall U-factor winter: .285
9. Overall U- Factor Summer: .264
10. Transmitt = 45
11. Solor Heat Gain 21

2.4 FIRE-PROTECTION-RATED GLAZING

A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies and NFPA 257 for window assemblies.

B. Monolithic Ceramic Glazing: Clear, ceramic flat glass; 3/16-inch (5-mm) nominal thickness.

1. Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:

a. Nippon Electric Glass Co., Ltd. (distributed by Technical Glass Products); Standard FireLite.
b. Safti First; SuperLite C/P.
c. Schott North America, Inc.; Pyran Star OR Pyran Crystal.
d. Vetrotech Saint-Gobain; SGG Keralite FR-R.

C. Fire-Protection-Rated Tempered Glass: 1/4-inch- (6.4-mm-) thick, fire-protection-rated tempered glass, complying with testing requirements in 16 CFR 1201 for Category II materials.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. InterEdge, Inc., a subsidiary of AFG Industries, Inc.; PyroEdge-20.
b. Safti First; SuperLite20.
c. Vetrotech Saint-Gobain; SSG Pyroswiss.

2.5 LAMINATED GLASS

A. Manufacturers: Subject to compliance with requirements,]:

B. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written recommendations.
2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

C. Windborne-Debris-Impact-Resistant Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, with "Windborne-Debris-Impact Resistance" Paragraph in "Glass Products, General" Article, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with one of the following to comply with interlayer manufacturer's written recommendations:

    a. Polyvinyl butyral interlayer.

2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

2.6 GLAZING SEALANTS

A. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Install gaskets so they protrude past face of glazing stops.

3.3 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.4 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations.

C. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

3.5 GLAZING SCHEDULE

A. Type “A” - Interior Door Lites: Clear tempered glass, ¼ inch (6mm).

B. Type “B” Exterior Aluminum Storefront Windows: Clear low-e glass dual pane, 1 inch thickness. Basis of design:
   1. Glass 1: Vitro Solarban 70 Clear on Vitro Clear Glass.

C. Type “C” Windborne-Debris-Impact-Resistant Laminated Glass (At Gym Windows).
   1. Glass 1: Inner layer – Basis of Design – 3M Safety and Security Window Film, S80, .203mm thickness.

D. Type ”D” : 60 and 90-minute-rated glazing; monolithic ceramic glazing.

   1. Provide safety glazing labeling.

E. Type “E” Exterior Aluminum Storefront Windows: Clear low-e glass dual pane, 1 inch thickness. Basis of design:
   1. Glass 1: Vitro Solarban 70 Clear on Vitro Clear Glass.
   2. Glass 2: Black Spandrel on Vitro Clear Glass.

END OF SECTION 08 8000

PART 1 – GENERAL

SUBMITTALS

Action Submittals:
Product Data: Manufacturer's descriptive data and product attributes. Samples:

QUALITY ASSURANCE

Installer Qualifications: Minimum 2 years' experience in work of this Section.

PART 2 – PRODUCTS

MATERIALS

Concrete Repair Polymer:
Source: SSP-500 by Solid Solution Products, www.ssppolymers.com [or approved substitute].
Description: Quick reacting, low viscosity polymer.
Hardness: Shore D 70, tested to ASTM D2240.
Elongation: 7 percent, tested to ASTM D412.
Compressive strength: Minimum 5000 PSI with aggregate, tested to ASTM D412.
Tensile strength:4480 PSI filled, tested to ASTM D412.
Bond strength: 1900 PSI, tested to ASTM D882.
Color: Gray.

PART 3 – EXECUTION

PREPARATION

Prepare surfaces to receive repairs in accordance with manufacturer's instructions.

APPLICATION

Apply materials in accordance with manufacturer's instructions. Finish patches and repairs flush with adjacent surfaces.
Close areas to traffic until repairs have cured.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
2. Suspension systems for interior gypsum ceilings and soffits.

B. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

2.2 FRAMING SYSTEMS

A. Steel Studs and Runners: ASTM C 645. Use either steel studs and runners or dimpled steel studs and runners of equivalent minimum base-metal thickness.

1. Minimum Base-Metal Thickness:

a. 0.032 inch (20 gauge): All interior wall locations.
b. 0.033 inch (20 gauge) at the following locations:

1) Wall framing supporting impact-resistant or abuse-resistant gypsum board.
2) Door leaves and openings exceeding 3 feet-6 inches wide.
3) At ceramic or porcelain tile-clad walls.
4) As indicated.

2. Depth: Refer to Drawings for dimensions required and selected from the following:

a. 3-5/8 inches
b. 6 inches.
c. 1-5/8 inches.
d. 2-1/2 inches.

B. Slip-Type Head Joints: Where indicated, provide one of the following in thickness not less than indicated for studs and in width to accommodate depth of studs:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- deep flanges and fastened to studs, and outer runner sized to friction fit inside runner.
3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes due to deflection of structure above.

    a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

        1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
        2) Metal-Lite, Inc.; Slotted Track, “The System.”
        3) Metal-Lite, Inc.; Slotted Restraining Angles, “The Angle System.”
        4) Steel Network Inc. (The); VertiClip SLD, or VertiTrack VTD Series.
        5) Superior Metal Trim; Superior Flex Track System (SFT).

C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.040 inch (1.0 mm) (20 gauge).

D. Cold-Rolled Channel Bridging: Steel, 0.053-inch minimum base-metal thickness, with minimum 1/2-inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.018 inch (25 gauge).
2. Depth: 7/8 inch.

F. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical.

G. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 3/4 inch.
2. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

C. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch and minimum 1/2-inch- wide flanges.

1. Depth: As indicated on Drawings.

D. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
2. Steel Studs and Runners: ASTM C 645. Use either steel studs and runners or dimpled steel studs and runners of equivalent minimum base-metal thickness.

    a. Minimum Base-Metal Thickness: 0.018 inch.
    b. Depth: As indicated on Drawings.

3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.

    a. Minimum Base-Metal Thickness: 0.018 inch (25 gauge).

4. Resilient Furring Channels: 1/2-inch- deep members designed to reduce sound transmission.

    a. Configuration: Asymmetrical.

E. Grid Suspension System for Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Armstrong World Industries, Inc.; “Shortspan” Drywall Framing System.
    b. Chicago Metallic Corporation; 640-C Drywall Furring System.
    c. USG Corporation; Drywall Suspension System.

F. Z-Shaped Furring: Nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 3/4 inch (19 mm), minimum base-steel thickness of 0.0179 inch (0.455 mm), and depth required to fit insulation thickness indicated. (AT STUCCO BOARD)
1. Basis-of-Design Product: Subject to compliance with requirements, provide ClarkDietrich; Z-Furring Channel or comparable product a current member of the SFIA.

2.4 AUXILIARY MATERIALS

A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Sill Sealer Gaskets: Use as a sill sealer in walls indicated to be acoustically rated, or where indicated on Drawings.

1. Closed-cell neoprene foam, ¼ inch (6.4 mm) thick, selected from manufacturer's standard width to match width of sill member.
2. Glass-fiber resilient insulation, fabricated into strip form, for use as a sill sealer; 1-inch (25.4) mm nominal thickness, compressible to 1/32 (0.8 mm); selected from manufacturer's standard widths to match width of sill member.

C. Isolation Strip at Exterior Walls: Provide asphalt saturated organic felt or foam gasket.

D. Factory-Prefabricated Backing Panels: Option in lieu of flat-strap backing plates, or plywood backing panels: Fire-retardant treated wood nailer (Dricon) with factory-applied metal wings for attaching panel to metal framing members; capable of supporting wall-mounted cabinets, plumbing fixtures, wall-protection components, and similar items. Provide products that comply with requirements of applicable codes for flamespread and smoke developed. Provide standard units of 16 or 24 inches long as required to fit framing spacing, or trimmable units for non-standard, off-module backing, or corner and angle-wall layouts. Units 5-1/8 inches high.

1. Danback; Deitrich Metal Framing, Inc.

a. D16F
b. D24F
c. Danback "Trimmables."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:

    a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.
    b. Multilayer Application: 16 inches o.c., unless otherwise indicated.
    c. Single-Layer Construction Receiving Ceramic Tile (Glass-Mat Tile Backer Boards): 12 inches o.c., or as recommended in “Handbook for Ceramic Tile Installation,” latest edition, of the Tile Council of America, Inc., unless otherwise indicated. Install on minimum 20-gauge steel framing members.
    d. Install galvanized framing around all toilet and bathrooms, and other rooms with high humidity environments.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
    d. Install two 20-gauge studs at each jamb for the following conditions, unless otherwise indicated. Pair studs face-to-face, or nest together according to stud manufacturer’s recommendations.

1) Solid core wood doors equal to or greater than 3 feet-0 inches wide.
2) Hollow metal doors equal to or greater than 3 feet-0 inches wide.
3) Doors of any opening width where the leaf weighs more than 100 pounds.
4) Pairs of doors of any opening width.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

E. Direct Furring:

1. Screw to metal stud framing.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
3. Coordinate location of hangers beneath ducts and piping so that hangers do not block access to, resetting of, operation or, or opening of duct access panels or dampers, or access to and operation of valves and similar piping controls.
4. Retain applicable construction types below.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
7. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

E. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

F. Z-Shaped Furring Members:

1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced [24 inches (610 mm)] <Insert dimension> o.c.

2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.

END OF SECTION 09 2216

SECTION 09 2900
GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior gypsum board.
   2. Tile backing panels.

B. Related Sections:
   1. Refer Drawings for specifications for wood framing and furring that supports gypsum board.
   2. Section 061600 "Sheathing" for wood panel sheathing.
   3. Section 072100 "Thermal Insulation" for thermal and acoustic insulation installed in assemblies that incorporate gypsum board.
   4. Division 09 painting Sections for primers applied to gypsum board surfaces.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.3 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. American Gypsum.
   2. CertainTeed Corp.
   3. Georgia-Pacific Gypsum LLC.
   4. Lafarge North America Inc.
   5. National Gypsum Company.
   6. Temple-Inland.
   7. USG Corporation.

B. Gypsum Board: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch, Type X.
   2. Long Edges: Tapered.

C. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
   1. Thickness: 1/2 inch.
   2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch, Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.2 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. CertainTeed Corp.; GlasRoc Tile Backer.
      b. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.
   2. Core: 5/8 inch (15.9 mm), Type X.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Material: Paper-faced galvanized steel sheet.
   2. Shapes:
      a. Cornerbead.
         1) 90-degree: Equal to USG B1W, or if required B1XW EL (Extra Wide)
         2) 135-degree: Equal to USG B1 OS.

b. LC-Bead: J-shaped; exposed long flange receives joint compound. Equal to USG B9.
c. L-Bead: L-shaped; exposed long flange receives joint compound. Equal to USG B4 Series.
d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
e. Expansion (control) joint. Equal to USG No. 093, single-piece B-shaped control joint and keyed metal flanges with removable tape.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:
1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.

2.5 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing).

D. Thermal and Acoustic Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Before installing sound attenuation or thermal insulations blankets, if any, and closing wall with first layer of gypsum board on second side of wall or partition, clean out all dust and debris from floor track and vacuum thoroughly.

C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
   1. Control Joints: Install control joints at locations indicated on Drawings.

I. Prefill open joints, rounded or beveled edges, and damaged surface areas.

J. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

K. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for tile.
   3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
      a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
      b. Walls and ceilings scheduled to receive flat or eggshell paint finish.
      c. Primer and its application to surfaces are specified in other Division 09 Sections.
      d. Walls and ceilings scheduled to receive flat or eggshell paint finish, except wet areas indicated to receive waterborne epoxy finish.

L. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

M. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

N. Remove and replace panels that are wet, moisture damaged, and mold damaged.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Standard Type: Vertical surfaces, unless otherwise indicated.
   2. Ceiling Type: Ceiling surfaces, as indicated on Drawings.
   3. Moisture- and Mold-Resistant Type: As indicated on Drawings, or in wet locations such as on walls behind sinks, lavatories, and toilets and urinals not indicated to receive tile, and for 2 feet on side walls adjacent to sinks and lavatories, shower or tub room walls not receiving tile, in janitor or housekeeping rooms on walls behind or adjacent to service sinks.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At high walls, install panels horizontally, unless otherwise indicated .
      c. Apply in lengths sufficient to extend from floor to ceiling with no horizontal joints
   3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
   1. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer

joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

2. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 APPLYING TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile. Areas behind cabinetry.
3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    a. Primer and its application to surfaces are specified in other Division 09 Sections.
    b. Walls and ceilings scheduled to receive flat or eggshell paint finish.

E. Finish Level Descriptions:

1. Level 1: Tape in joint compound at joints and interior angles. Tool marks and ridges acceptable.
2. Level 2: Level 1, plus separate coat of compound at joints, angles, fasteners,, and accessories. Tool marks and ridges acceptable.
3. Level 3: Level 1, plus two separate coats of compound at joints, angles, fasteners and accessories. Tool marks and ridges are not acceptable; surface shall be smooth and free of tool marks and ridges.
4. Level 4: Level 1, plus three separate coats of compound at joints, angles, fasteners and accessories. Compound shall be smooth and free of tool marks and ridges.

F. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.

3.6 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 2900

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Porcelain tile.
2. Ceramic tile.
3. Quarry tile.
4. Waterproof membrane.
5. Thin-brick veneer.
6. Crack isolation membrane.
7. Tile backing panels.
8. Metal edge strips.

B. Related Sections:

1. Section 09 2900 “Gypsum Board” for cementitious tile backer board.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples:

1. Each type and composition of tile and for each color and finish required.
2. Assembled samples, with grouted joints, for each type and composition of tile and for each color and finish required.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of floor tile installation. Approximate size 8 feet by 8 feet.
2. Build mockup of each type of wall tile installation.
3. Do not proceed with tile installation until Architect has approved mockups for both tile selection, grout selection, and installation quality and design.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 EXTRA MATERIALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated in Finish Legend in Drawings.

PART 2 - PRODUCTS

2.1 TILE PRODUCTS

A. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. Floor Tile: Porcelain tiles.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Material Finish Legend and Room Finish Schedule, or comparable products by one of the following, as approved by Architect:

a. American Olean; Division of Dal-Tile International Inc.
b. Crossville, Inc.
c. Daltile; Division of Dal-Tile International Inc.
d. Interceramic.
e. Lone Star Ceramics Company.

2. Module Size: Sizes listed in Finish Legend in the Drawings.
3. Thickness: Manufacturer's standard.
4. Face: Pattern of design indicated in drawings, with square edges.
5. Finish: Indicated by manufacturer's designation for tile indicated in Finish Legend in the Drawings.
6. Tile Color and Pattern: As indicated in the Finish Legend in the Drawings.
7. Grout Color: As indicated in the Finish Legend in the Drawings.

2.2 TRANSITIONS

A. General: Provide correct sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

2.3 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325.

1. Products: Subject to compliance with requirements, provide available products that may be incorporated into the Work include, but are not limited to, the following:

a. C-Cure; C-Cure Board 990.
b. Georgia-Pacific DensShield Tile Backer.
c. CertainTeed Diamondback GlasRoc Tile Backer.

d. Custom Building Products; Wonderboard.
e. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
f. USG Corporation; DUROCK Cement Board.

2. Thickness: 1/2 inch (12.7 mm)

B. Fiber-Cement Underlayment: ASTM C 1288.

1. Products: Subject to compliance with requirements, provide available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corp.; FiberCement BackerBoard
b. James Hardie; Hardiebacker 500

2. Thickness: As indicated on the drawings.

2.4 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Contractor to evaluate application and submit appropriate product according to site and slab conditions.

Fabric-Reinforced, Fluid-Applied Membrane System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

1. Products: Basis of design - Laticrete International, Inc.; Hydro Ban Waterproofing/Crack Isolation Membrane

2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 and is recommended by the manufacturer for the application indicated. Contractor to evaluate application and submit appropriate product according to site and slab conditions.

B. Fabric -Reinforced, Fluid-Applied Membrane System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

1. Products: Basis of design - Laticrete International, Inc.; Hydro Ban Waterproofing/Crack Isolation Membrane

2.6 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

B. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Boiardi Products; a QEP company.
b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.

g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.
k. TEC; a subsidiary of H. B. Fuller Company.

2. For wall applications, provide nonsagging mortar.

C. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Boiardi Products; a QEP company.
b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Mer-Kote Products, Inc.
j. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.
l. TEC; a subsidiary of H. B. Fuller Company.

2. Prepackaged, dry-mortar mix to which only water must be added.
3. Prepackaged, dry-mortar mix combined with liquid-latex additive.
4. For wall applications, provide nonsagging mortar.

D. Organic Adhesive: Not permitted.

E. EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar (Thin Set): ANSI A118.11.

1. Manufacturers: Subject to compliance with requirements, provide available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Bonsal American; an Oldcastle company.
b. Bostik, Inc.
c. C-Cure.
d. Custom Building Products.
e. Jamo Inc.
f. Laticrete International, Inc.
g. MAPEI Corporation.

2. Prepackaged, dry-mortar mix to which only water must be added.
3. Prepackaged, dry-mortar mix combined with liquid-latex additive.

F. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.

1. Manufacturers: Subject to compliance with requirements, provide available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Atlas Minerals & Chemicals, Inc.

b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Mer-Kote Products, Inc.

2.7 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10.

B. Standard Cement Grout: ANSI A118.6.

1. Manufacturers: Subject to compliance with requirements, provide available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Boiardi Products; a QEP company.
b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.

C. Polymer-Modified Tile Grout: ANSI A118.7.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Boiardi Products; a QEP company.
b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.
k. TEC; a subsidiary of H. B. Fuller Company.

2. Polymer Type: Dry, redispersible form, prepackaged with other dry ingredients.
3. Polymer Type: Liquid-latex form for addition to prepackaged dry-grout mix.

D. Water-Cleanable Epoxy Grout: ANSI A118.3.

1. Manufacturers: Subject to compliance with requirements, provide available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Atlas Minerals & Chemicals, Inc.
b. Boiardi Products; a QEP company.
c. Bonsal American; an Oldcastle company.
d. Bostik, Inc.
e. C-Cure.
f. Custom Building Products.
g. Jamo Inc.
h. Laticrete International, Inc.
i. MAPEI Corporation.
j. Mer-Kote Products, Inc.

E. Premixed Urethane Grout: Install in toilets and showers.

1. Manufacturer: Subject to compliance with requirements, provide the following product:

a. StarQuartz “Quartzlock 2.”

2. Install at all toilet and shower locations that have tile walls and/or floors.

F. Grout for Pregrouted Tile Sheets: Same product used in factory to pregrout tile sheets.

2.8 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."

1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. One-Part, Mildew-Resistant Silicone Sealant: Refer to Section 079200 “Joint Sealants."ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, provide available products that may be incorporated into the Work include, but are not limited to, the following:

a. DAP Inc.; Titanium Enriched Kitchen and Bath Sealant] [100 percent Silicone Kitchen and Bath Sealant.
b. Dow Corning Corporation; Dow Corning 786.
c. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.
d. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
e. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
f. Tremco Incorporated; Tremsil 600 White.

C. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

1. Products: Subject to compliance with requirements, provide available products that may be incorporated into the Work include, but are not limited to, the following:

a. Bostik, Inc.; Chem-Calk 550.
b. Degussa Building Systems; Sonneborn Sonolastic SL 2.
c. Pecora Corporation; [Dynatrol II-SG] [NR-200 Urexpan].

d. Sika Corporation; Sikaflex-2c SL.
e. Tremco Incorporated.; [THC-900] [THC-901] [Vulkem 245].

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, stainless steel, ASTM A 666, 300 Series exposed-edge material. Provide one of the following styles as indicated in Drawings, and to suit conditions of installation and adjacent materials. Provide heights as required. Finish: Anodized aluminum (for all types listed below).

1. Schluter: Reno-Ramp.
2. Schluter: Reno-V.

C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Bonsal American, an Oldcastle company; Grout Sealer.
b. Bostik, Inc.; CeramaSeal Grout & Tile Sealer.
c. C-Cure; Penetrating Sealer 978.
d. Custom Building Products; Grout and Tile Sealer.
e. Jamo Inc.; Penetrating Sealer.
f. MAPEI Corporation; KER 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
g. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
h. Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.
i. TEC, a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone Grout Sealer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic Tile Installation" for products and installation methods indicated in the drawings. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods and apply to types of setting and grouting materials used. Contractor responsible for providing appropriate materials and products to suit project site conditions and comply with manufacturers recommendations.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

    a. Tile floors composed of tiles 8 by 8 inches or larger.
    b. Tile floors in wet areas.
    c. Tile floors in laundries.
    d. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.
    e. Tile floors composed of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Porcelain Floor Tile: 1/8 inch, unless credit-card width (1/16 inch) ungrouted joints are indicated in Material Finish Legend and Room Finish Schedule.
2. Rectified Porcelain Tiles: 1/16 inch.

G. Metal Edge Strips: Install at locations indicated; Re: "Transitions" in Drawings

H. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

I. Install cementitious backer unit and fiber-cement underlayment and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-

portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

J. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

K. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

L. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

M. Joint Widths:

1. Provide unsanded grout for joints under 1/8 inch wide
2. Provide sanded grout for joint over 1/8 inch wide.

N. Provide urethane grout where indicated in General Finish Notes.

END OF SECTION - 09 3000

SECTION 09 5100
BLADES ACOUSTICAL PANEL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for ceilings.

B. ACTION SUBMITTALS

B. Product data: For each type of panel and each type of suspended grid system.

C. Product samples:

1. Samples each type of panel.
2. Samples of each type of suspension grid.

1.2 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Acoustical Ceiling Panels: Full size panels equal to 2.0 percent of amount installed.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store acoustical panels and suspension systems in a fully enclosed, conditioned space protected from damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Standard: Acoustical panel ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 ACOUSTICAL PANELS (A

A. Basis-of-Design Manufacturer: As indicated in Finish Legend.

1. Products listed in Finish Legend and installed per Room Finish Schedule.

2.3 CEILING SUSPENSION SYSTEM

A. Manufacturers: Filz Felt

B. Attachment Devices: Sized for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated. Comply with seismic design requirements.

C. Wire Hangers, Braces, and Ties:
   1. Provide suspension cable with ceiling mounting plate which includes mounting plate with Cable Gripper
   2. Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
   3. Size: Provide yield strength at least 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung), but not less than 0.106-inch- (2.69-mm-) diameter wire.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

B. Install acoustical panels to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

C. Layout panel design such that panels are easily removable beneath mechanical ductwork fire damper access doors. Coordinate work with mechanical trades and, where possible, from mechanical ductwork shop drawings. Inform Architect before installing any panels which appears to have a conflict, so adjustments can be made in panel design, lighting fixture, and diffuser designs and layout.

D. Suspend ceiling hangers from building's structural members and as follows:

   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support panels, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
   4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts,

eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support panels directly from steel roof deck tabs. Attach to structural members.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Space hangers on panels as recommended by the manufacturer.

E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

F. Arrange directionally patterned acoustical units as indicated on Drawings.

3.2 CLEANING

A. Clean exposed surfaces of acoustical panels, including trim, edge moldings, and suspension system members.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

SECTION 09 5113
ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for ceilings.

B. Related Requirements:
1. Section 01 81 13.14 “Sustainable Design Requirements-LEEDv4.”

1.2 ACTION SUBMITTALS

A. Product data: For each type of tile and each type of suspended gird system.

B. Product samples:

1. Samples each type of tile.
2. Samples of each type of suspension grid.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Acoustical Ceiling Panels: Full size panels equal to 2.0 percent of amount installed.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store acoustical panels and suspension systems in a fully enclosed, conditioned space protected from damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Standard: Acoustical panel ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Comply with NFPA 5000, Chapter 10.

2.2 ACOUSTICAL PANELS

A. Basis-of-Design Manufacturer: Armstrong World Industries.

1. Products listed in Room Finish Legend and installed per Room Finish Schedule.

B. Classification: As follows, per ASTM E 1264:

1. ACT 1: Type III, Form 2, Pattern CE (perforated, small holes and lightly textured. Wet-formed mineral fiber with factory-applied latex paint.

   a. Product: “School Zone Fine-Fissured.”
   b. 24 by 24 inches by 5/8 inch thick.
   c. Edge: Square. (Non-tegular).
   d. Color: white.
   e. Fire Guard.
   f. Fire performance Class A (UL)

2. ACT 2: Type X, Pattern GI, Water-felted mineral fiber with unperforated fully adhered vinyl-faced panel and edge, with sealed back (Clean Room, scrubbable).

   a. Product: “Ceramaguard – Fine Fissured”.
   b. 24 by 24 inches by 5/8 inch thick.
   c. Edge: Square. (Non-tegular).
   d. Color: White.
   e. Fire Guard.
   f. Fire performance Class A (UL).

3. ACT 3: Type III, Form 2, Pattern CE (perforated, small holes and lightly textured. Wet-formed mineral fiber with factory-applied latex paint.

   a. Product: “School Zone Fine-Fissured.”
   b. 24 by 24 inches by 5/8 inch thick.
   c. Edge: Square. (Non-tegular).
   d. Color: Tech Black.
   e. Fire Guard.
   f. Fire performance Class A (UL)

4.

2.3 CEILING SUSPENSION SYSTEM

A. Manufacturers: Armstrong World Industries.

B. Ceiling Suspension System: Armstrong “Prelude XL,” Wide-face, 15/16 inch. direct-hung system; ASTM C 635, intermediate-duty structural classification.

1. Face Design: Flat, flush.
2. Face Finish: Painted white.
3. For Ceiling Panels: All designations.

C. Attachment Devices: Sized for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated. Comply with seismic design requirements.

D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

1. Size: Provide yield strength at least 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung), but not less than 0.106-inch- (2.69-mm-) diameter wire.

E. Accessories:

1. Hold-Down Clips.

F. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:

1. Basis-of-Design Manufacturer: Armstrong World Industries, Inc.
2. Basis-of-Design Product: “Axiom.”
3. Sizes: Provide products selected from manufacturer’s standard dimensions, or 2-, 4-, or 6-inches as indicated on Drawings or in Schedules on Drawings.
4. Provide manufacturer’s standard mounting and splicing trims, and inside and outside corners as applicable for installations indicated on Drawings.
5. Colors: White, or special color indicated on Drawings and Finish Legend, and selected from manufacturer’s standard range.
6. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
7. Finish: Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils Comply with ASTM C 635/C 635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.4 SEALANT

A. Sealant at Edge Molding: For sealants installed at joint between edge molding and painted wall surfaces, refer to Section 099123 “Interior Painting.”

PART 3 - EXECUTION

3.1 INSTALLATION

A. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

B. Install acoustical ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

C. Layout ceiling grid such that no main runners are installed beneath mechanical ductwork fire damper access doors. Only easily removable cross-tees may be installed beneath access doors. Coordinate work with mechanical trades and, where possible, from mechanical ductwork shop drawings. Inform Architect before installing any ceiling grid which appears to have a conflict, so adjustments can be made in ceiling grid, lighting fixture, and diffuser designs and layout.

D. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from steel roof deck tabs. Attach to structural members.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

9. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

F. Arrange directionally patterned acoustical units as indicated on Drawings.

3.2 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

SECTION 09 6513
RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Resilient base.
2. Resilient molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.4 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient products.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

A. Resilient Base:

1. Basis-of-Design Manufacturer: Roppe.
2. Other Available Manufacturers:

a. Armstrong World Industries, Inc.
b. Johnsonite.

c. Mannington Commercial.

B. Resilient Base Standard: ASTM F 1861.

1. Material Requirement: Type TS (rubber, vulcanized thermoset).
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Cove (base with toe).

C. Resilient Base Properties:

1. Minimum Thickness: Indicated by manufacturer's standard for product listed in Finish Legend.
2. Height: 4 inches.
3. Lengths: Coils in manufacturer's standard length.
4. Outside Corners: Job formed.
5. Inside Corners: Job formed.
6. Finish: As selected by Architect from manufacturer's full range.
7. Colors and Patterns: As indicated in Finish Legend.

2.2 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:

1. Available Manufacturers: Provide same manufacturer as supplied for resilient base.

a. Armstrong World Industries, Inc.
b. Johnsonite.
c. Mannington Commercial.
d. Roppe.

2. Description: Refer also to Schedule on Drawings.

a. Carpet edge for glue-down applications.
b. Nosing for carpet.
c. Nosing for resilient floor covering.
d. Joiner for tile and carpet.
e. Transition strips.
f. Reducer strips.

3. Resilient Accessories Properties:

a. Material: Rubber.
b. Profile and Dimensions: 4 inch high, cove base.
c. Colors and Patterns: Indicated in Room Finish Legend.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until they are same temperature as the space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

3.3 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Cover resilient products until Substantial Completion.

END OF SECTION 09 6513

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vinyl composition floor tile.

B. Related Sections:

1. Division 09 Section "Resilient Base and Accessories" for resilient base, reducer strips, and other accessories installed with resilient floor coverings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of special patterns.

C. Samples for Verification: Full-size units of each color and pattern of floor tile required.

D. Product Schedule: For floor tile. Use same designations indicated on Drawings and in Finish Legend and Room Finish Schedules.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

1.4 CLOSEOUT SUBMTITALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 MAINTENANCE MATERIALS SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed, and return to Owner any full, unused tile from opened boxes.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.8 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

1.9 WARRANTY

A. Special Assembly Warranty: Standard form in which manufacturer agrees to repair or replace resilient floor tile that does not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Vinyl Floor Tile: 10 years material defect warranty, 2 year limited labor warranty.

PART 2 - PRODUCTS

2.1 VINYL FLOOR TILE

A. Products: Subject to compliance with requirements, provide the products indicated in the Finish Legend and Room Finish Schedule.

B. Wearing Surface: Smooth.

C. Thickness: By manufacturer’s specification for product indicated in Finish Legend.

D. Size: By manufacturer’s specification for product indicated in Finish Legend.

E. Colors and Patterns: As indicated by manufacturer's designations for products listed in the Finish Legend.

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives for Vinyl Tile: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.

1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Vinyl Tile Adhesives: Not more than 50 g/L.

C. Floor Polish:

1. Vinyl Tile: None required, or according to manufacturer’s recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate. Do not use gypsum-based floor patching leveling compounds; use only portland-cement based patching and leveling compounds as recommended by tile manufacturer.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 09 6519

SECTION 09 06566
RESILIENT ATHLETIC SURFACING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of the indoor resilient multipurpose surfacing
B. Application of the game lines.
C. References for the correct construction and preparation of concrete slabs to receive resilient flooring.
D. Related Requirements:
   1. Section 01 8113.14 “Sustainable Design Requirements-LEEDv4”.

1.2 SUBMITTALS

A. Product Data:
   1. Manufacturer’s promotional brochures, specifications and installation instructions
B. Manufacturer Certifications:
   1. Provide certification that accurately identifies the Original Equipment Manufacturer (OEM) of flooring furnished for this project including manufacturer’s name, address and factory location.
   2. Suppliers of private label flooring for this project must identify themselves as such and fully disclose the OEM information listed above.
   3. All “manufacturer” requirements in these specifications must be complied with by the OEM, including warranties, certifications, qualifications, product data, test results, environmental requirements, performance data, etc.
C. Samples:
   1. Submit for selection and approval three (3) sets of the indoor resilient multipurpose surfacing, manufacturer’s brochures, samples or sample boards of all of the available colors, textures and styles.
   2. Submit color samples of all the available game line paint colors for selection and approval.
D. Closeout Submittals:
   1. Submit three (3) copies of the indoor resilient multipurpose surfacing and manufacturer’s maintenance instructions.
   2. Submit three (3) copies of the material and installation warranties as specified.
E. LEED Submittals:
   1. Product Data: For adhesives and sealants, including VOC content.
   2. Laboratory Test Reports for Low-Emitting Materials: For adhesives and sealants, indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of

Health Services' "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Small-Scale Environmental Chambers."
3. Laboratory Test Reports for Low Emitting Materials: For resilient athletic surfacing products and accessories. indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services") "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Small-Scale Environmental Chambers."
4. Environmental Product Declaration (EPD): Provide EPD that meets one of the following disclosure criteria: Product-specific declaration: publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope. Industry-wide (generic) declaration: conform to ISO 14025 and EN 15804 or ISO 21930 and have at least a cradle to gate scope, with third-party certification (Type Ill), including external verification, in which the manufacturer is explicitly recognized as a participant by the program operator. Product-specific Type III: conform to ISO 14025 and EN 15804 or ISO 21930 and have at least a cradle to gate scope, with third-party certification (Type ill), including external verification in which the manufacturer is explicitly recognized as the participant by the program operator.
5. Health Product Declaration: The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.

1.3 QUALITY ASSURANCE

A. Qualifications:
   1. The indoor resilient multipurpose surfacing shall have been actively marketed for a minimum of ten (10) years.
   2. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 9001 certified plant.
   3. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 14001 certified plant.
   4. The indoor resilient multipurpose surfacing supplier shall be an established firm, experienced in the field, and competent in the techniques required by the manufacturer.
   5. The installer of the indoor resilient multipurpose surfacing shall have a minimum of five (5) years of experience in the field installing indoor resilient multipurpose surfacing and have worked on at least five (5) projects of similar size, type and complexity.

B. Certifications:
   1. Installer to submit the indoor resilient athletic surfacing manufacturer's or distributor's certification attesting that they are an approved installer ofthe indoor resilient multipurpose surfacing.
   2. The ind**o**or resilient multipurpose surfacing manufacturer to submit official ISO 9001 certification for the facility in which the indoor resilient multipurpose surfacing is manufactured.

C. Testing:
   Tests shall be relative for multi-purpose use with certificates from independent testing resources to be made available upon request. Test results shall be performed according to ASTM standard testing procedures including ASTM F2772 "Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems".

1.4 DELIVERY, STORAGE AND HANDLING

A. Delivery:
   Material shall not be delivered until all related work is in place and finished and/or proper storage facilities and conditions can be provided and guaranteed stable according to FieldTurf USA, Inc. recommendations.

B. Storage:
   1. Store the material in a secure, clean and dry location.
   2. Maintain temperature between 55° and 85° Fahrenheit.
   3. Store the indoor resilient athletic surfacing rolls in an upright position on a smooth flat surface immediately upon delivery to jobsite.
   4. Rolls shipped in rigid protective cardboard containers can be laid horizontally prior to unpacking and installation.

1.5 PROJECT/SITE CONDITIONS

A. It is the responsibility of the general contractor/construction manager to maintain project/site conditions acceptable for the installation of the indoor resilient multipurpose flooring.

B. The area in which the indoor resilient multipurpose surfacing will be installed shall be dry and weather tight. Permanent heat, light and ventilation shall be installed and operable.

C. All other trades shall have completed their work prior to the installation of the resilient athletic flooring. The general contractor or construction manager shall maintain a secure and clean working environment before, during and after the installation.

D. Maintain a stable room temperature of at least 65°F for a minimum of one (1) week prior to, during and thereafter installation.

E. An effective low-permeance vapor barrier is placed directly beneath the concrete

subfloor. For “on” or “below grade” installations, it is recommended to provide a permanent vapor barrier resistant to long term hydrostatic pressure/moisture exposure. Protrusions should be sealed to prevent moisture migration into the slab. Moisture should not be allowed to enter the slab after the completed construction.

F. Concrete subfloor surface pH level within the 7 to 11 range dependent upon installation type.

G. Concrete subfloor should be no greater than 1/8" within a 10 ft diameter. This tolerance can be measured in accordance with ASTM E1155. A specified (FF) of 50 and an (FL) of 30 should reach this degree of floor flatness and floor level. There is no numerical correlation between F numbers and the deviation from the straight edge. However, the above specified numbers should achieve a flat floor with minimal deviation in the slab. Reference ACI 117 and ACI 302.1R. The general contractor should provide a certificate of compliance with the above recommendations.

H. Concrete subfloor must be clean and free of all foreign materials or objects including, but not limited to, curing compounds and sealers.

I. Fill cracks, grooves, voids, depressions, and other minor imperfections. Follow the manufacturer’s directions. Moveable joints must be treated utilizing specific transitioning joint devices depending upon the architect’s recommendations. Follow current ASTM F710 guidelines for the preparation of concrete slabs to receive resilient flooring.

J. Refer to ACI 302.2R “Guidelines for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials” for concrete design and construction.

K. Concrete slab shall be fortified with continual steel reinforcement. Fiber reinforcement alone shall not be considered adequate fortification.

1.6 WARRANTY

A. Special Limited Warranty:
   1. Manufacturer's standard form in which manufacturer agrees to repair or replace sports flooring including labor that fails within specified warranty period.

B. Material warranty must be direct from the product manufacturer.
   1. Material warranties must come from original manufacturer or division thereof. Private label warranties from distributors or brokers are not valid. Supply original point of manufacturing upon request.

C. Failures include, but are not limited to, the following:
   1. Material manufacturing defects.
   2. Surface wear and deterioration to the point of wear-through of wear layer per ASTM F410/ASTM F1303.
   3. Failure due to substrate moisture exposure exceeding 98 percent relative humidity when tested according to ASTM F2170.

D. Warranty Period:
   1. For material defects and surface wear-through: **25** years from date of substantial completion.
   2. For moisture vapor tolerance: **25** years from date of substantial completion.
E. Installer's Limited Warranty:
   1. Installer's standard form in which installer agrees to repair or replace sports flooring that fails due to poor workmanship or faulty installation within the specified warranty period.
   2. Warranty Period: 2 years from date of substantial completion.

1.7 ADDITIONAL MATERIALS

A. Furnish to the owner additional materials containing a total of at least 1% of each different color or design of the indoor resilient athletic surfacing used on the project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The basis of the design for the indoor resilient multipurpose surfacing is Omnisports Multi-Use as manufactured by Tarkett – MAIN FLOOR.
B. The basis of the design for the indoor resilient multipurpose surfacing is Omnisports HPL 7 mm as manufactured by Tarkett – UNDER THE RECTRACTABLE BLEACHERS.
C. All other installation accessories and related components must be either made or approved by the indoor resilient athletic surfacing manufacturer.
D. Other products may be approved as equal if deemed qualified and submitted in accordance with the General Conditions.
E. Test reports confirming compliance from an independent sports laboratory must be provided along with samples, technical data, installation, maintenance, and warranty prior to acceptance as an alternative product.

2.2 MATERIALS

A. Omnisports Multi-Use - Prefabricated sport surface 6.2 mm .14" with wood flooring design, single surface embossing and Extreme Three (3) Layerstechnology (X3LT) as supplied by Tarkett.
   1. Embossing of wood design and solid colors must be the same;varying embossing or surface textures will not be allowed.
   2. Printing of wood design shall closely resemble standard wood strip flooring in size, color, board length, and grain appearance.
   3. Surface embossing combined with TopClean XP must offer proper balance of surface friction per the ASTM F2772.

4. Surface embossing combined with TopClean XP must provide resistance to stains and scratches. Surface profile must not incorporate linear embossing.
5. The wood design shall be protected by a clear layer of pure PVC (Polyvinyl Chloride) and TopClean XP, a factory-applied UV cured urethane treatment.
6. Extreme Three (3) Layers technology (X3LT) includes Omnisports XCS cushion, glass veil and calendared sheet must offer improved shock absorbing comfort while providing better indentation recovery.
7. The XCS cushion force reduction layer shall be high-density closed cell PVC foam with honeycomb embossing, and is applied in one continuous manufacturing process.
8. Laminated or adhered foam layers will not be allowed.
9. Field constructed products will not be accepted.

A. Physical properties of the indoor resilient athletic surfacing shall conform to the following minimums:

Width	—	6’ 6” (2 m)
Length	—	85’ (25.9m) approx.
Wear Layer	—	2 mm
Total Thickness	—	6.2 mm
Wear Layer	Type 1– Grade 1	ASTM F1303/F410
Vertical Deformation	PASSED	ASTM F2772
Rolling Load	PASSED	≤0.50 mm (EN 1569 {11/1999})
Surface Finish Effect	PASSED	ASTM F2772 (80 – 110)
Chemical Resistance	Excellent	ASTM F925
Impact Resistance	PASSED	EN 1717
Abrasion Resistance	PASSED	0.10 (EN ISO 5470-1 {06/1999})
Static Load Limit	PASSED	ASTM F970- Load 175 Lbs
Sound Insulation	Excellent	+/= 19 dB (ISO 717/2)
In-Room Sound Insulation	Excellent	65dB (NF S31-074)
Ball Rebound	PASSED	ASTM F2772 > 90%
Force Reduction	PASSED	ASTM F2772 Class 2
Fire Rating	PASSED	ASTM E648 Class 1
Microbial Assays Test	No Growth	G21 ASTM - Backing
Asthma and Allergy Friendly™	ASP: 05-01/101	Certified Compliant
VOC	<10µg/m³	ASTM D5116 (small chamber)
Phthalate-free technology	—	YES
REACH Compliant	—	YES
Heavy Metals	—	NO
ISO 9001	—	YES
ISO 14001	—	YES

1. Color: As available from the indoor resilient athletic surfacing

manufacturer's standard range.

2. Hardwood Design Series: High definition printing for a realistic wood surface appearance as available from the indoor resilient athletic surfacing manufacturer's standard range.
3. Texture: Texture to remain consistent between solid colors and wood design when blending colors.

C. Welding Rod: As supplied by the indoor resilient athletic surfacing manufacturer or supplier.
   1. Color to blend with the indoor resilient athletic surfacing color or design.
   2. All seams shall be welded to create a monolithic and impermeable surface.

D. Adhesive: As approved by the indoor resilient athletic surfacing manufacturer.

E. Game Line Paint and Primer: As approved by the indoor resilient athletic surfacing manufacturer.

2.3 MATERIALS

A. Omnisports HPL 7 mm - Prefabricated sport surface with wood flooring design and slightly textured embossed surface as supplied by Tarkett.
   1. Embossing of wood design and solid colors must be the same; varying embossing or surface textures will not be allowed.
   2. Printing of wood design shall closely resemble standard wood strip flooring in size, color, board length, and grain appearance.
   3. The wood design shall be protected by a clear layer of pure PVC (Polyvinyl Chloride) and TopClean xp, a factory-applied UV cured urethane treatment.
   4. Intermediate layers shall be fortified with a non-woven fiberglass grid for increased dimensional stability.
   5. A high density load resistant underlayment, field constructed and installed per manufacturer's construction specifications incorporated to provide higher load resistance.

B. Physical properties of the indoor resilient athletic surfacing shall conform to the following minimums:

Width	Omnisports	6' 6" (2 m)
Length	Omnisports	85' (25.9m) approx.
Wear Layer	Omnisports	2 mm
Total Thickness	Omnisports HPL	7 mm (5 + 2)
High Density Underlayment	ASTM D297	0.67 g/cm^3
Tear Strength	ASTM D412	410-425 min. Die C
Elongation	ASTM D412	120-125 min. Die C
Static Load	ASTM F970	500 psi
Reaction to Fire	ASTM E648	Class 1
Specular Gloss	EN ISO 2813	13%
Wear Layer	Type 1, Grade 1	ASTM F1303/F410

Taber Abrasion	ASTM D3389	0.02 g (1000 cycles)
Stain Resistance	ASTM F925	Excellent
Moisture Tolerance with Multi-Poxy	ASTM F2170	98% RH
Vertical Deformation	PASSED	ASTM F2772
Surface Finish Effect	PASSED	ASTM F2772 (80 - 100)
Ball Rebound	PASSED	ASTM F2772 >90%
Force Reduction	PASSED	ASTM F2772 Class 1
Phthalate-free technology	—	YES
REACH Compliant	—	YES
Heavy Metals	—	NO
ISO 9001	—	YES
ISO 14001	—	YES

1. Color: As available from the indoor resilient athletic surfacing manufacturer's standard range.
2. Hardwood Design Series: A wood look design as available from the indoor resilient athletic surfacing manufacturer's standard range.
3. Texture: Texture to remain consistent between solid colors and wood design when blending colors.

C. Welding Rod: As supplied by the indoor resilient athletic surfacing manufacturer or supplier.
   1. Color to blend with the indoor resilient athletic surfacing color or design.
   2. All seams shall be welded to create a monolithic and impermeable surface.
D. Adhesive: As approved by the indoor resilient athletic surfacing manufacturer.
E. Game Line Paint and Primer: As approved by the indoor resilient athletic surfacing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the responsibility of the general contractor/construction manager to ensure that project/site conditions are acceptable for the installation of the indoor resilient athletic flooring.
B. Verify that the area in which the indoor resilient athletic surfacing will be installed is dry and weather tight. Verify that permanent heat, light and ventilation are installed and operable.
C. Verify that all other work that could cause damage, dirt and dust or interrupt the normal pace of the indoor resilient athletic flooring installation is completed or suspended.
D. Verify that there is a stable room temperature of at least 65°F.
E. Verify that there are no foreign materials or objects on the subfloor and that the subfloor is clean and ready for installation.
F. Direct Full Spread Adhering to Concrete Subfloor Multi-Poxy: moisture content less

than 98% RH when tested per ASTMF2170.

G. Follow Fieldturf USA, Inc. installation recommendations.
H. Do not average the results of the tests. Report all field test results in writing to the General Contractor, Architect, and End User prior to installation.
I. Verify that the concrete subfloor surface pH level is within the 7 - 11 range.
J. Document the results confirming the slab is within manufacturer's tolerances for slab deviation.

3.2 PREPARATION OF SURFACES

A. Sand the entire surface of the concrete slab.
B. Sweep the concrete slab so as to remove all dirt and dust. If a sweepingcompound is to be used it must be a sweeping compound that does not contain oil or other items that may inhibit the adhesive bond.
C. Slab must be dust free. In the event that dust impairs adhesive bond, priming the slab prior to application of adhesive may be necessary. Follow installation guidelines.
D. Follow OSHA guidelines.

3.3 INSTALLATION

A. The installation area shall be closed to all traffic and activity for a period to be set by the indoor resilient athletic surfacing installer. The indoor resilient athletic surfacing installation shall not begin until the installer is familiar with the existing conditions.
B. All necessary precautions should be taken to minimize noise, smell, dust, the use of hazardous materials and any other items that may inconvenience others.
C. Install the indoor resilient athletic surfacing in strict accordance with the indoor resilient athletic surfacing manufacturer's written instructions.
D. Install the indoor resilient athletic surfacing minimizing cross seams. Provide a seam diagram during the submittal process for approval prior to installation. Vinyl Sheet Flooring Seams: Comply with ASTM F 1516. Rout joints and heat weld to permanently and seamlessly fuse sections together.
E. Paint game lines using approved game line paint primer and game line paint in strict accordance with the game line paint manufacturer's instructions.
F. Install appropriate threshold plates or transition strips where necessary.

3.4 CLEANING

A. Remove all unused materials, tools, and equipment and dispose of any debris properly. Clean the indoor resilient athletic surfacing in accordance with the manufacturer's instructions.

3.5 PROTECTION

A. If required, protect the indoor resilient athletic surfacing from damage using coverings approved by the manufacturer until acceptance of work by the customer or their authorized representative.

3.6 RELATED STANDARDS AND GUIDELINES

A. ASTM F2170 “Standard Test Method for Determining Relative Humidity In Concrete Floor Slabs Using In-Situ Probes”
B. ASTM F710 “Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring”
C. ACI 302.2R-06 “Guideline for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials”
D. ASTM F2772-11 “Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems”

END OF SECTION

SECTION 09 6813
TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes modular nylon carpet tile.

B. Related Sections include the following:

1. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Type of subfloor.
3. Type of installation.
4. Pattern of installation.
5. Pattern type, location, and direction.
6. Pile direction.

C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 MAINTENANCE MATERAILS SUBMITTAL

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An installer with a proven, successful record of installations of the same type and size as this Project.

B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.9 FIELD CONDITIONS

A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

B. Environmental Limitations: Do not install carpet tiles until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.10 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of face fiber, and delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Products: Indicated in the Finish Legend and Room Finish Schedule.

1. Color: Indicated in the Material Finish Legend and Room Finish Schedule
2. Size: Indicated by manufacturer's product designation.

B. Applied Soil-Resistance Treatment: Manufacturer's standard material Insert treatment.

C. Antimicrobial Treatment: Manufacturer's standard material.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

C. Rubber Edge/Transition Strips: Extruded rubber strips as indicated in Finish Legend notes, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710.

C. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

D. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

F. Preparation: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

G. Installation: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.

H. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.

I. Maintain dye lot integrity. Do not mix dye lots in same area.

J. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

K. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

L. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

M. Install pattern parallel to walls and borders, unless otherwise indicated in the Drawings.

N. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

O. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."

END OF SECTION 09 6813

SECTION - 09 7720

FIBERGLASS REINFORCED WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished gypsum wallboard.
   1. PVC trim.
   2. PVC Wall base.

B. Products Not Furnished or Installed under This Section:
   1. Gypsum substrate board.
   2. Resilient Base.

1.2 RELATED SECTIONS

A. Section Gypsum substrate board.

B. Section Painting & Transparent Finishes.

C. Section Resilient Base.

1.3 REFERENCES

A. American Society for Testing and Materials: Standard Specifications (ASTM)
   1. ASTM D 256 - Izod Impact Strengths (ft #/in)
   2. ASTM D 570 - Water Absorption (%)
   3. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi)
   4. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi)
   5. ASTM D 2583- Barcol Hardness
   6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
   7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.

3. Installation methods.

B. Manufacturers Material Safety Data Sheets (MSDS) for adhesives, sealants and other pertinent materials prior to their delivery to the site (available as downloads for most Marlite's products at http://www.marlite.com/tech-details.aspx or by contacting Marlite at info@marlite.com).

1.5 QUALITY ASSURANCE

A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
   1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)
      a. Wall Required Rating – Class A.

B. Sanitary Standards: System components and finishes to comply with:
   1. United States Department of Agriculture (USDA) requirements for food preparation facilities, incidental contact.
   2. Food and Drug Administration (FDA) 1999 Food Code 6-101.11.
   3. Canadian Food Inspection Agency (CFIA) requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.

B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (70°) for 48 hours prior to installation.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
   1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

1.8 WARRANTY

A. Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Marlite; 202 Harger Street, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com www.marlite.com.

B. Other manufacturers meeting performance specification.

C. Product:
1. Standard FRP
2. Induro FRP
3. Artizan FRP with Sani-Coat.
4. Envue with Sani-Coat.
5. Symmetrix with Sani-Coat.

2.2 PANELS

A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
1. Coating: Multi-layer print, primer and finish coats or applied over-layer.
2. Dimensions:
   a. Thickness – 0.090“ (2.29mm) nominal
   b. Width - 4'-0” (1.22m) nominal
   c. Length – 8’-0” (2.4m) nominal
3. Tolerance:
   a. Length and Width: +/-1/8 “ (3.175mm)
   b. Square - Not to exceed 1/8 “ for 8 foot (2.4m) panels or 5/32 “ (3.96mm) for 10 foot (2.4m) panels

B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
1. Flexural Strength - 1.0 x 10^4 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
2. Flexural Modulus - 3.1 x 10^5 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)
3. Tensile Strength - 7.0 x 10^3 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
4. Tensile Modulus - 1.6 x 10^5 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
5. Water Absorption - 0.72% per ASTM D 570.
6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
7. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

D. Front Finish:

Specifier Note: Marlite’s Standard FRP, Induro FRP, Artizan FRP, Envue FRP & Symmetrix with Sani-Coat Panels are available in several configurations, including Class A (I) and Class C

(III) Fire-rated, along with various surface textures for both Standard FRP & Symmetrix with Sani-Coat. All Marlite FRP products can be made available with standard surface grooving and customized groove layouts to match architectural specifications.

a. Color: Specifier to choose.
   1) Marlite Standard FRP is available in a variety of colors, including;
      a) 199 Bright White – Smooth Surface
      Custom patterns and colors are available. Minimum quantities may apply. Contact a Marlite representative for details.

b. Surface Marlite Standard FRP and Symmetrics are available on two standard surface textures. Pebbled (indicated by "P" designation i.e., P 100 White) and Smooth (indicated by "S" designation i.e., S 100 White). All other Marlite FRP products are smooth surface texture.

c. Fire Rating Specifier to choose. Marlite FRP is available in either Class A (I) or Class C (III) Fire Rating. Specifier should add designation to product number only for Class A (i.e., P 100 White, Class A).

d. Size: [Specifier to choose, or as indicated on drawings.] standard sizes are;
   1) Marlite FRP / Symmetrics / Artizan / Envue
      a) 48" x 96"

2.3 MOLDINGS

Aluminum Trim: Heavy weight extruded aluminum 6063-T5 alloy prefinished at the factory.

1. Profiles :
   a. F 550 Inside Corner, 8' length
   b. F 561 Outside Corner, 8' length
   c. F 565 Division, 8' length
   d. F 570 Edge, 8' length
   e. Color: Brite Anodized

B. SaniSeal Trim: Co-extruded, dual-durometer polypropylene/monprene profiles with Dual-Seal Technology and high-performance pressure sensitive adhesive.
   1. S650 Inside Corner, 10' length
   2. S660 Outside Corner, 10' length
   3. S665 Division, 8' length
   4. S670 Edge, 10' length
   5. Color: White

C. Outside Corner Guard:
   1. F 560SS Stainless Corner Guard, 8' length
   2. Finish: #4 brushed satin
   3. M 961 PVC Outside Corner Guard
      a. Color: White, 8' length

2.4 ACCESSORIES

A. Fasteners: Non-staining nylon drive rivets.
   1. Match panel colors.
   2. Length to suit project conditions.

B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.
   1. Marlite C-551 FRP Adhesive - Water- resistant, non-flammable adhesive.
   2. Marlite C-375 Construction Adhesive - Flexible, water-resistant, solvent based adhesive, formulated for fast, easy application.
   3. Titebond Advanced Polymer Panel Adhesive – VOC compliant, non-flammable, environmentally safe adhesive.

C. Sealant:
   1. Marlite Brand MS-250 Clear Silicone Sealant.
   2. Marlite Brand MS-251 White Silicone Sealant.
   3. Marlite Brand - Color Match Sealant.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
   1. Verify that stud spacing does not exceed 24” (61cm) on-center.

B. Repair defects prior to installation.
   1. Level wall surfaces to panel manufacturer’s requirements. Remove protrusions and fill indentations.

3.2 INSTALLATION

A. Comply with manufacturer's recommended procedures and installation sequence.

B. Cut sheets to meet supports allowing 1/8” (3 mm) clearance for every 8 foot (2.4m) of panel.
   1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.
   2. Pre-drill fastener holes 1/8” (3mm) oversize with high speed drill bit.
      a. Space at 8” (200mm) maximum on center at perimeter, approximately 1” from panel edge.
      b. Space at in field in rows 16’ (40.64cm) on center, with fasteners spaced at 12” (30.48 cm) maximum on center.

C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
   1. Install panels with manufacturer's recommended gap for panel field and corner joints.

a. Adhesive trowel and application method to conform to adhesive manufacturer's recommendations.
b. Drive fasteners for snug fit. Do not over-tighten.

D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.
1. All moldings must provide for a minimum 1/8" (3mm) of panel expansion at joints and edges, to insure proper installation.
2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

3.3 CLEANING

A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 09 7720

SECTION 09 9113
EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Galvanized metal.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
2. Final approval of color selections will be based on benchmark samples.

    a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. Porter Paints.
3. PPG Architectural Finishes, Inc.
4. Sherwin-Williams Company (The).
5. Valspar.

2.2 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colors: As indicated in the Finish Legend and Room Finish Schedule.

2.3 METAL PRIMERS

A. Primer, Galvanized: As recommended in writing by topcoat manufacturer.

1. Benjamin Moore; Moore's IMC Acrylic Metal Primer No. M04.
2. Pittsburgh Paints; 6-209 SpeedHide Interior/Exterior Galvanized Steel Primer.
3. Sherwin-Williams; Galvite HS Paint B50WZ30.

2.4 SOLVENT-BASED PAINTS

A. Alkyd, Exterior, Semi-Gloss (Gloss Level 5): MPI #94.

1. Sherwin-Williams; Direct-to-Metal Enamel (alkyd enamel), B55W00101.

2.5 WATER-BASED PAINTS

A. Primer: Exterior Wood Primer for Acrylic Enamel Paint: MPI #6.

1. Benjamin Moore; Sure Seal, Latex Primer Sealer; 027/K027.
2. Pittsburgh Paints; Exterior Wood Primer; DR1502
3. Pratt & Lambert; Pro-Hide Gold, Exterior Latex Primer Z8460/F8460.
4. Sherwin-Williams; A-100 Exterior Latex Wood Primer B42W8041.

B. Latex, Exterior Semi-Gloss: MPI #11.

1. Pittsburgh Paints; SpeedHide Exterior House & Trim Semi-Gloss Acrylic Latex Paint; 6-900XI Line.
2. Pratt & Lambert; ProHide Gold, Exterior Latex Semi-Gloss; Z8600 Line.
3. Sherwin-Williams; A-100 Latex Gloss, A08W00151.

2.6 DRY FALL COATINGS

A. Dry Fall, Alkyd, Flat: MPI #55.

1. Pratt & Lambert; Krylon Industrial, Alkyd Dry Fall, Flat White; K000E34111.
2. Sherwin-Williams; Protective & Marine, Dry Fall Flat; B48W00060.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.
2. Architect may, in the normal course of project inspection, test dry film thicknesses at random with a destructive gauge. Contractor will then correct areas found deficient, or, in areas found satisfactory, touch-up test areas according to procedures described in other Articles of this Section.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Galvanized-Metal Substrates:

1. Alkyd System: Hollow Metal Doors; hollow metal door frames, exposed structural steel, exposed metal deck.

    a. Prime Coat: Cementitious galvanized-metal primer.
    b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    c. Topcoat: Exterior alkyd enamel (semigloss).

2. Alkyd Dry Fall: Exposed structural steel roof framing, exposed steel joists, exposed steel roof deck.

    a. Prime Coat: Dry Fall Flat.
    b. Top Coat: Dry Fall Flat.

END OF SECTION 09 9113

SECTION 09 9123
INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Gypsum board.
2. Ferrous metals.
3. Steel
4. Zinc-coated metals.

B. Related Sections include the following:

1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
2. Section 099113 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.
3. Section 099300 “Staining and Transparent Finishes” for finishing wood and wood-veneer products and surfaces.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

D. Coating Maintenance Manual:

1. Upon conclusion of the project, the Contractor or paint manufacture/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touchup procedures, and color samples of each color and finish used.

1.3 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

    a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
    b. Other Items: Architect will designate items or areas required.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.

    a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Sherwin-Williams Co.
2. Porter Paints.
3. PPG Architectural Finishes, Inc.
4. Pratt and Lambert.
5. Benjamin Moore & Co.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As indicated in the Finish Legend and Room Finish Schedule.

C. To the greatest extent possible, select low-odor and/or low-VOC products.

2.3 PRIMERS/SEALERS

A. Primer Sealer, Latex, Interior: MPI #50.

B. Primer Sealer, Interior, Institutional Low Odor/VOC: MPI #149.

C. Primer, Latex, for Interior Wood: MPI #39.

2.4 METAL PRIMERS

A. Primer, Rust-Inhibitive, Water Based: MPI #107.

B. Primer, Galvanized, Water Based: MPI #134.

2.5 WATER-BASED PAINTS

A. Latex, Interior, Flat, (Gloss Level 1): MPI #53.

B. Latex, Interior, (Gloss Level 4): MPI #43.

C. Latex, Interior, Semi-Gloss, (Gloss Level 5): MPI #54.

D. Latex, Interior, Gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees): MPI #114.

E. Latex, Interior, Institutional Low Odor/VOC, Flat (Gloss Level 1): MPI #143.

F. Latex, Interior, Institutional Low Odor/VOC, Semi-Gloss (Gloss Level 5): MPI #147.

2.6 SOLVENT-BASED PAINTS

A. Alkyd, Quick Dry, Semi-Gloss (Gloss Level 5): MPI #81.

2.7 DRY FALL COATINGS

A. Dry Fall, Latex, Flat: MPI #118.

B. Dry Fall, Water-Based for Galvanized Steel, Flat (MPI Gloss Level 1): MPI 133.

C. Dry Fall, Water-Based for Galvanized Steel, Semi-Gloss (Gloss Level 5): MPI 158.

2.8 THINNER AND CLEANUP

A. Low-Odor Alkyd Paint Thinner and Cleanup:

1. Pittsburgh Paints: Odorless Thinner; 21-300 Line.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

    a. Uninsulated metal piping.
    b. Uninsulated plastic piping.
    c. Pipe hangers and supports.
    d. Tanks that do not have factory-applied final finishes.
    e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
    f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

    a. Switchgear.
    b. Panelboards.
    c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Water-Based Dry-Fall System:

    a. Prime Coat: Shop primer specified in Section where substrate is specified.
    b. Topcoat: Dry fall, latex, flat, MPI #118.
    c. Topcoat: Dry fall, water based, for galvanized steel, flat (Gloss Level 1), MPI #133.

2. Alkyd System:

    a. Prime Coat: Shop primer specified in Section where substrate is specified.
    b. Intermediate Coat: Alkyd, interior, matching topcoat.
    c. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5), MPI #47.

B. Galvanized-Metal Substrates:

1. Institutional Low-Odor/VOC Latex System:

    a. Prime Coat: Primer, galvanized, water based, MPI #134.
    b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
    c. Topcoat: Latex, interior, institutional low odor/VOC, flat (Gloss Level 1), MPI #143.
    d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (Gloss Level 5), MPI #147.

C. Gypsum Board Substrates:

1. Latex System:

    a. Prime Coat: Primer sealer, latex, interior, MPI #50.

b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior, flat, (Gloss Level 1), MPI #53.
d. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

2. Institutional Low-Odor/VOC Latex System:

a. Prime Coat: Primer sealer, interior, institutional low odor/VOC, MPI #149.
b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
c. Topcoat: Latex, interior, institutional low odor/VOC, flat (Gloss Level 1), MPI #143.
d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (Gloss Level 5), MPI #147.

END OF SECTION 09 9123

SECTION - 10 1100
VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Markerboards.

1.2 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Surfaces lose original writing and erasing qualities.
b. Surfaces exhibit crazing, cracking, or flaking.

2. Warranty Period: 50 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Core Material: Provide one of the following as standard with manufacturer:

1. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
2. Particleboard: ANSI A208.1, Grade M-1., made with binder containing no urea formaldehyde.

B. Extruded Aluminum: ASTM B 221, Alloy 6063.

2.2 WHITEBOARD ASSEMBLIES

A. Glass Magnetic Markerboards:

1. Basis-of-Design Manufacturer: Claridge Products and Equipment, Inc.
2. Series/Product: MGMI-48.

3. Retain one of first four subparagraphs below. Verify availability and thickness with manufacturers selected. Particleboard core is most dimensionally stable core material listed.
4. Sizes: 4’-0” inches high by 4’-0” inches wide (WB#1)” .
5. Mounting: Manufacturer’s proprietary “Invisi-Mount.”

B. Whiteboard Accessories

1. Map Rail: Aluminum frame with cork insert.
2. Marker Tray: Aluminum with closed ends.

2.3 TV MOUNTS

A. For Sizes of TV 47” thru 90”. Articulatind and tilting full motion.
1. Tilts -2° to 10° and rotates 45° for ideal viewing position.
2. Finish black.
3. Max . monitor weight 132 lbs.

2.4 FABRICATION

A. Visual Display Boards: Factory-assemble visual display boards unless otherwise indicated.

1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

2.5 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.

B. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

C. Field-Assembled Visual Display Units: Coordinate field-assembled units with grounds, trim, and accessories indicated. Join parts with a neat, precision fit.

1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
2. Provide manufacturer's standard vertical-joint system between abutting sections of markerboards.

D. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches (400 mm) o.c. Secure both top and bottom of boards to walls.

1. Field-Applied Aluminum Trim: Attach trim over edges of visual display boards and conceal grounds and clips. Attach trim to boards with fasteners at not more than 24 inches (610 mm) o.c.
2. Attach markertrays to boards with fasteners at not more than 12 inches (300 mm) o.c.

E. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room. Cover and protect visual display surfaces.

END OF SECTION 10 1100

SECTION 10 1400
EXTERIOR SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Steel plate graphics and letters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.
   1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

1.3 QUALITY ASSURANCE

A. Signage Standard, Exterior Signs, General: Comply with City of Sand Springs signage standards and requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

B. Weathering Steel Plate or Sheet: Cor-Ten A, ASTM A242/A242M or Cor-Ten B, A588/A588M.
   1. Material Thickness: ½ inch (6.4 mm).

2.2 FABRICATION

A. Solid Steel Plate (Weathering Type) for Graphics: Fabricate from sheet steel banks with uniform faces; square-cut, smooth, eased edges; precisely formed lines and profiles; and as follows:
   1. Mounting: As indicated on Drawings.
   2. Sign backlite.

B. General:
   1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Internally brace signs for stability and for securing fasteners.
5. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.3 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.

B. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.
   1. Projected Mounting: Mount characters at projection distance from wall surface indicated.

C. Cleaning and Protection: Upon completion of the installation clean letter surfaces IAW the manufacturer’s instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10 1400

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cutout metal dimensional characters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

C. Samples: For each sign type and for each color and texture required.

1.3 QUALITY ASSURANCE

A. Signage Standard, Exterior Signs, General: BIA Handbook sign standards.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet and Plate: (ASTM B 209), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.

2.2 DIMENSIONAL CHARACTERS, EXTERIOR

A. Cutout Characters: Characters with uniform faces; square-cut, smooth, eased edges; precisely formed lines and profiles; and as follows:

B. Basis-of-Design Manufacturer: A. R. K. Ramos Signage Systems.

1. Other Available Manufacturers:

a. ASI Sign Systems, Inc.
b. Gemini Incorporated.
c. Metal Arts; Division of L & H Mfg. Co.
d. Metallic Arts.

2.3 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish nonferrous-metal, stainless-steel, or hot-dip galvanized devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General: Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
4. Sign Mounting Fasteners: Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Cut each letter from a single sheet so that there are not joints within the individual character.
2. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
3. Create signage to required sizes and layout. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

2.6 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.7 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

2.8 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.

B. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions. Provide heavy paper template to establish character spacing and to locate holes for fasteners.

1. Projected Mounting: Mount characters at projection distance from wall surface indicated.

3.2 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 1419

SECTION 10 1423
PANEL SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Panel signs.

1.2 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

C. Samples: For each sign type and for each color and texture required.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel:

1. Thickness: 1/8 inch.
2. Panel Size(s): Indicated on Drawings and Signage Schedule.
3. Finish: No. 4 directional satin finish.

B. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils with pressure-sensitive adhesive backing, suitable for exterior applications.

2.2 PANEL SIGNS

A. ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1 require tactile and Braille characters to be raised a minimum of 1/32 inch (0.8 mm) from face of sign.

B. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.

1. Panel Material: Stainless steel, matching panel finish.
2. Raised-Copy Thickness: Not less than 1/32 inch.
3. Round or ease corners.

C. Text: Etched or blasted into surface of stainless steel.

1. Font: Selected by Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.

1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.

3.2 SIGNAGE SCHEDULE

A. Refer to Signage Schedule on Drawings for text, quantities, installation details and locations

END OF SECTION 10 1423

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-polymer toilet compartments configured as toilet enclosures.

B. Related Requirements:
1. Section 01 8113.14 Sustainable Design Requirements-LEEDv4.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for each exposed product and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Zamac: ASTM B 86, commercial zinc-alloy die castings.

2.2 SOLID-POLYMER UNITS

A. Basis-of-Design Manufacturer: Scranton Products “Hiny Hiders.”

B. Toilet-Enclosure Style: Floor-anchored, overhead braced.

C. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) or polypropylene (PP) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Integral Hinges: Configure doors and pilasters to receive integral hinges.
2. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum or stainless-steel strip fastened to exposed bottom edges of solid-polymer components to prevent burning.
3. Polymer Panel Finish: One color and pattern in each room.

    a. Color and Pattern: As selected by Architect from manufacturer's full range.

D. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; polymer or stainless steel.

1. Polymer Color and Pattern: Matching pilaster.

E. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; polymer or extruded aluminum.

    a. Polymer Color and Pattern: Matching panel.

F. Solid polymer toilet compartments (HDPE) shall be NFPA 286 compliant and Class “A” plastic.

2.3 ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Chrome-plated zamac.
2. Hinges: Manufacturer's standard integral hinge for solid-polymer doors.
3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount at 4 feet-6 inches above finished floor to comply with ADA requirements, unless another dimension is indicated on standards shown on Drawings.
5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility.

    a. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.4 FABRICATION

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- wide, in-swinging doors for standard toilet compartments and 36-inch- wide, out-swinging doors with a minimum 32-inch-wide, clear opening for compartments designated as accessible. Provide 36-inch wide doors at accessible compartments if indicated on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

B. Stirrup Brackets: Secure panels to walls and to pilasters with continuous channel brackets. Locate anchors to occur in masonry or tile joints.

3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10 2113

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Washroom accessories.
2. Framed mirrors.
3. Infant changing table.

B. Related Sections:

1. Division 09 Section “Non-Structural Metal Framing” for plywood supports install inside walls to support wall mounted accessories and other items.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule:

1. Identify locations using room designations indicated on Drawings.
2. Identify products using designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to be included in maintenance manuals.

B. Warranty: Sample of special warranty.

1.4 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

1.5 QUALITY ASSURANCE

A. Comply with ADDAABAAG 2004 Edition.

1.6 WASHROOM ACCESSORIES

A. Grab Bars: Contractor Furnished; Contractor installed.

1. Manufacturer and Series: Bradley 812 series, except as noted.
2. Mounting: Surface; flanges with concealed fasteners.
3. Material: Stainless steel, 0.05-inch nominal wall thickness. Standard gripping finish.
4. Select first option in first subparagraph below for medium-duty applications, second option for heavy-duty.
5. Outside Diameter: 1-1/2 inches.
6. Patient-Grab Bars Weight Capacity: Install all patient grab bars to withstand downward loads of a least 800 lbf.

7. Select first option in first subparagraph below for medium-duty applications, second option for heavy-duty.
8. Select first option in first subparagraph below for medium-duty applications, second option for heavy-duty.
9. Configuration and Length:

    a. Grab Bar 1: 42 inches long: 8120-001-42. Straight bar.
    b. Grab Bar 2: 36 inches long: 8120-001-36. Straight bar.
    c. Grab Bar 3: 18 inches long: 8120-001-18. Straight bar. (Vertical)
    d. Grab Bar 4: 36 inches long: 832-05/06. 24 X 36-inch right-angle bar.

B. Liquid-Soap Dispenser (SD1): Contactor furnished; Contractor installed.

1. Manufacturer: Bradley.
2. Mounting: Surface mounted. Model number 6562.

C. Liquid-Soap Dispenser (SD2): Contactor furnished; Contractor installed.

1. Manufacturer: Solera Shower Dispenser 3 chamber – Model number SLBK334R.
2. Mounting: Surface mounted. Model number 6562.

D. Liquid-Soap Dispenser (SD3): Contactor furnished; Contractor installed.

1. Manufacturer: Bradley.
2. Mounting: Countertop mounted. Model number 6326.

E. Hand Sanitizer (HSD1): Contactor furnished; Contractor installed.

1. Manufacturer: Bradley.
2. Mounting: Countertop mounted. Model number 6A01-11

F. Towel Dispenser (PTD1): Contactor furnished; Contractor installed.

1. Manufacturer: Bradley.
2. Mounting: Wall Surface. Size 11” wide x 8” height 4” depth.

G. M1/M2: Mirrors: Contractor finished; Contractor installed.

1. M1: 24”x 36”: Channel Framed Mirror: Bradley. Model 781-2436. (stainless steel frame).
2. M2: 24” x 36” Channel Framed Mirror with Fixed Tilt (HC); Bradley, Model 740.

H. ND - Sanitary Napkin Vendor Dispenser: Semi-recessed.

1. Bradley, Model 4017-10. Satin stainless steel.

I. PTDW: Paper Towel Dispenser/Waste Receptacle. Contractor furnished; Contractor installed.

1. Bradley, Model 2252-10. Semi-recessed, medium capacity. 4.9-gallon waste.
2. Satin stainless steel.

J. SCR: Shower Curtain Rod with Hooks: Contractor finished; Contractor installed.

1. Manufacturer. Bradley Model Number 9533. Wide to fit shower or width.

K. SND: Sanitary Napkin Disposer: Contractor finished; Contractor installed.

1. Manufacturer and Series: SND-1: Bradley; Model 4781-11.
2. Mounting: Surface.

3. Description: Single, surface-mounted container, 8 inches wide by 11 inches high by 4-1/8 inches deep; top-mounted self-closing lift lid and disposable bag inserts. The locked bottom opens for removal of waxed paper liner.
4. Finish: Satin stainless steel.

L. CH: Coat/Robe hook with concealed mounting. Contractor furnished; Contractor installed.

1. Manufacturer and Series: Bradley 9114 series.
2. Mounting: Surface; flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick. Smooth, No. 4, satin finish.
4. Location: Refer to Toilet Accessories Schedule on Drawings.

M. TTD1: Toilet Tissue Roll Dispenser: Contractor furnished; Contractor installed.

1. Twin-roll, non-controlled spindles. Bradley, Model 5126, Mounting:
2. Mounting: Surface.

N. Shower Seat (SHS1): Contractor furnished; Contractor installed.

1. Manufacturer: Bradley.
2. Description: Fold-up shower seat.
3. Mounting: Wall Surface. Model Number 9594 Folding Reversible.

O. Coat/Robe hook with concealed mounting (CH): Contractor furnished; Contractor installed.

1. Manufacturer and Series: Bradley 9114 series.
2. Mounting: Surface; flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick. Smooth, No. 4, satin finish.
4. Location: Refer to Toilet Accessories Schedule on Drawings.

1.7 MISCELLANEOUS ACCESSORIES

A. Mop and Broom Holder (MOP): Contractor furnished; Contractor installed.

1. JS-1: Bradley No. 9953.
2. Mounting: Surface.
3. Length: 24 inches.
4. Mop/Broom Holders: Three spring-loaded, rubber hat, cam type.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

a. Shelf: None.
b. Rod: None.

1.8 MEDICAL ACCESSORIES

A. First Aid Kit. (FAK) Uline ANSI Approved first Aid Kit Model No. H-9997 Class B+. Contractor furnished; Contractor installed.

1.9 CHILDCARE ACCESSORIES

A. Baby Changing Station: (BC1) Contractor furnished, contractor installed.

1. Manufacturer: As indicated in drawings.

2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap

a. Engineered to support a minimum of (250-lb) static load when opened.

3. Mounting: Surface mounted, with unit projecting not more than (4 inches) from wall when closed.
4. Operation: By pneumatic shock-absorbing mechanism.
5. Material and Finish: 20 ga. stainless steel over polyethylene core.
6. Liner Dispenser: Built in.

B. Other Available Manufacturers: Subject to compliance with requirements, other manufacturers offering products that may be incorporated into the Work include the following:

1. American Specialties, Inc.
2. Brocar Products, Inc.
3. Diaper Deck & Company, Inc.
4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
5. Koala Kare Products; a division of Bobrick Washroom Equipment, Inc.
6. SSC, Inc.
7. Tubular Specialties Manufacturing, Inc

1.10 WASHROOM ACCESSORIES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Specialties, Inc.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.

B. Products: Furnish and install the following products. Refer to Toilet Accessories Schedule on Drawings for manufacturer and model number.

1.11 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Equip units for concealed anchorage and with corrosion-resistant backing plates.

PART 2 - EXECUTION

2.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units' level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install all patient grab-bars to withstand a downward load of at least 800 lbf, when tested according to ASTM F 446.

2.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 2800

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINETS

A. Fire-Protection Cabinets: Enameled-steel, semi-recessed cabinets suitable for a 10-lb fire extinguisher.

1. Available Manufacturers:

a. J. L. Industries, Inc., a division of Activar Construction Products Group.
b. Kidde Residential and Commercial Division, Subsidiary of Kidde plc.
c. Larsen's Manufacturing Company. (Basis-of-Design, as listed in Specialties Schedule on Drawings).
d. Potter Roemer LLC.
e. Watrous Division, American Specialties, Inc.

B. Cabinet: Basis-of-Design Product: Larsen's Manufacturing Company, Model SS-C2409-R5, and SS-C2409- SM5.

1. Cabinet Construction: Non-Rated.
2. Inside box dimension: 6 inches deep by 24 inches high by 9-1/2 inches wide.
3. Frame Overall Dimensions: 13 inches wide by 27-1/2 inches high.
4. Cabinet Frame Projection from Wall: 1-1/2 inches, roll edge.

C. Cabinet Material: Steel sheet.

1. Trim Style: Rolled trim.
2. Trim Material: Stainless steel.

D. Door Material: Stainless steel.

1. Door Style: Vertical duo.
2. Door Glazing: Acrylic.

E. Accessories: Mounting brackets; Identification lettering.

F. Tent plastic fire extinguisher sign 18” x 4”.

G. Finishes:

1. Manufacturer's standard baked-enamel paint for the interior of cabinet.
2. Stainless Steel: No. 4.

2.2 FIRE EXTINGUISHERS

A. Portable Fire Extinguishers: NFPA 10, listed and labeled for the type, rating, and classification of extinguisher.

1. Available Manufacturers:

a. Ansul Incorporated; Tyco International Ltd.
b. Badger Fire Protection; a Kidde company.
c. Buckeye Fire Equipment Company.
d. J. L. Industries, Inc.; a division of Activar Construction Products Group.
e. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
f. Larsen's Manufacturing Company.
g. Potter Roemer LLC.

2. Multipurpose Dry-Chemical Type: UL-rated 4-A:80-B:C, 10-lb nominal capacity, in enameled-steel container**.**

3. Class K – Fire Extinguishers – 1-A.K. (Kitchens and General Science)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cabinets at 54 inches above finished floor to top of cabinet.

B. Identification: Apply vinyl lettering to cabinets at locations indicated.

C. Install fire extinguishers in cabinets where indicated.

END OF SECTION 10 4400

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Ceiling mounted basketball backstops.

B. Gymnasium divider curtains.

C. Volleyball systems.

D. Gymnasium wall padding.

E. Pickel Ball Netting

1.2 RELATED SECTIONS

A. Section 03 3000 - Cast-in-Place Concrete (03 30 00) - Cast-In-Place Concrete.

1.3 REFERENCES

A. American Association of Textile Chemists and Colorists (AATCC):
   1. AATCC 30 - Antifungal Activity, Assessment on Textile Materials: Mildew and Rot Resistance of Textile Materials.

B. ASTM International (ASTM):
   1. ASTM D2261 - Standard Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine.
   2. ASTM D3574 - Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
   3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. California Fire Code Technical Information Bulletin (TIB):
   1. TIB 117 - Flammability Standard Requirements for Upholstered Furniture.

D. Federation Internationale de Volleyball (FIVB) - Rules and Regulations.

E. National Fire Protection Association (NFPA):
   1. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
   2. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

F. International Standards Organization (ISO):
   1. ISO 20743 - Textiles - Determination of Antibacterial Activity of Textile Products.

G. National Collegiate Athletic Association (NCAA) - Rules and Regulations.

H. National Federation of State High School Associations (NFHS) - Rules and Regulations.

I. Underwriters Laboratories (UL):
   1. UL 214 - UL Standard for Safety Tests for Flame-Propagation of Fabrics and Films.
   2. UL Standard 66010-2-201-Standard for Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use.

J. USA Volleyball (USAV) - Rules and Regulations.

K. International Basketball Federation(FIBA) - Rules and Regulations.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data:
   1. Manufacturer's data sheets on each product to be used.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Typical installation methods.

C. Shop Drawings: Submit manufacturer's shop drawings showing plans, elevations, sections, details and attachments to other work. Include equipment layouts, game markings and wiring diagrams as applicable.
   1. For basketball backstops attached to building structure, submit calculations for actual vertical and horizontal loads to be transmitted to structural roof framing supporting backstop assemblies. Loads shall be calculated for specific support configuration shown on Drawings.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.

C. Source Limitations: All specified components including basketball backstops, gymnasium divider curtains, multi-sport practice cages, volleyball systems, and gymnasium wall padding shall be products of a single manufacturer.

D. Equipment: Designed, fabricated, and installed to comply with requirements for competition play of the following associations:
   1. National Federation of State High School Associations (NFHS).
   2. National Collegiate Athletic Association (NCAA).
   3. International Basketball Federation (FIBA).
   4. USA Volleyball (USAV).
   5. Federation Internationale de Volleyball (FIVB).

1.6 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name, manufacturer, and location of installation. Upon delivery, materials shall be inspected for damage. Deficient materials shall not be used.

B. Storage: Store materials in a clean, dry area indoors in accordance with manufacturer's instructions. Keep temporary protective coverings in place to product from damage due to moisture and construction activities.

C. Handling: Protect materials and finish from damage to surface and edges during handling and installation.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty for materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: IPI by bison, which is located at: 603 L St.; Lincoln, NE 68508; Toll Free Tel: 800-637-7968; Fax: 800-638-0698; Email:request info (sales@ipibybison.com); Web:http://ipibybison.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements. All manufacturers must certify that no less than 90 percent of the product cost is produced with United States sourced material and labor.

2.2 CEILING-MOUNTED BASKETBALL BACKSTOPS

A. Ceiling Mounted Basketball Backstops: As manufactured by IPI by Bison.
   1. Model: IP1350FF Ceiling Suspended, Forward Fold, Rear Braced Basketball Backstops as manufactured by IPI by Bison.
      a. Rear Braces: Includes a wedge lock assembly which rolls up and down the roller guide of 1-7/8 inch (48 mm) outer diameter, schedule 40 pipe.
      b. Wedge Lock Assemblies: Adjustable to precisely plumb the face of backboard.
   2. Operation: Electric.

3. Main Frame Assemblies: Components form a rigid, triangle unit when assembled.
    a. Main Central Masts: 6 inches (152 mm) outer diameter, 11 gauge steel tube.
    b. Diagonal Sway Braces: 2-3/8 inches (60 mm) outer diameter schedule 40 pipe.
    c. Horizontal Spreaders: 2 x 3 inches (51 x 76 mm), 11 gauge steel tube.
    d. Adjustability: 1 inch (25 mm) diameter, 10 inches (254 mm) long threaded eyebolts to provide adjustability to level the frame during installation.
4. Bearings: Bearing points operate on precision fit bronze oilless type bearings.
5. Steel Support Structures: Backstops suspended from super structure.
6. Finishing: Factory applied polyester powder coating on metal parts, except galvanized or plated components.
    a. Color: Black.
    b. Color White.
7. Finishing: Factory applied primer on metal parts, except galvanized or plated components, for field painting. Color: Gray.

B. Electric Hoists: As manufactured by LynRus for IPI by Bison.
1. Model: BA973LR (3/4 HP) as manufactured by LynRus for IPI by Bison.
2. Hoist Type: Gear driven electric hoist designed to hold backstop at any position during raising or lowering.
3. Motors: Standard, 115 Volt, single phase, UL Listed, instantly reversible with 20 minute duty cycle.
4. Limit Switches: Rotary type switch controls, repeatable stop at raised and lowered positions.
5. Gears: Hardened steel, positive locking, double reduction worm and worm wheel.
6. Cable Take Up Drums: 4-1/2 inches (114 mm) outside diameter with cable take-up grooves. 60 ft (18288 mm) cable capacity.
7. Lifting Capacity: 1250 lbs (567 kg) at 9 ft (2743 m) per minute.
8. Cable: 1/4 inch (6 mm) diameter, galvanized, 6x19 strand core aircraft cable with 7,000 lbs (3175 kg) break strength.
9. Gear Box: Fully enclosed; self-lubricating, ball bearing supported.
10. Mounting: Clamps to 3-1/2 inches (89 mm) OD ceiling suspended structural pipe.
11. Controls: Standard, 3 position key switch, momentary contact wall control switch to lower, raise, and stop backstop.
    a. Keys: Two keys provided to Owner for each lock.
    b. Cover Plates: Stainless steel, with up/down markings.

C. Safety Locks: Model BA950LR as manufactured by LynRus for IPI by Bison.
1. Operation: Inertia sensitive mechanism automatically locks backstop in position at any time during storage, raising or lowering, due to a sudden surge of speed created by cable breakage or other failure, for each suspended unit.
2. Single Failure Use: Equipment failure activates device; replacement required.
3. Housing: Fully enclosed, cast aluminum.
4. Safety Strips: 6000 lbs (2722 kg) capacity, 2 inches (51 mm) wide polyester strap; 35 ft (10668 mm) strap capacity.
5. Mounting: Mounts to 3-1/2 inches (89 mm) outside diameter ceiling suspended structural pipe with clamps provided by manufacturer.

D. Goal Height Adjusters: As manufactured by IPI by Bison.

E. Backboards: As manufactured by IPI by Bison.
   1. Model: BA42XL Unbreakable 42 x 72 inches (1067 x 1829 mm) Rectangular Glass Backboard as manufactured by IPI by Bison.
      a. Backboards: 42 x 72 inches (1067 x 1829 mm) rectangular, 1/2 inch (13 mm) thick tempered glass.
      b. Shooter's Square: Official white shooter's square and border with 5 x 4 inches
      c. (127 x 102 mm) goal mounting pattern.
      d. Extruded Aluminum Frames: Held together in top corners by corner brackets that provide for the industry standard 36 x 62 inches (914 x 1575 mm) short board corner mounting pattern.
      e. Support Structure: Factory fabricated rectangular tubular steel rim support structure extending the full 72 inch (1929 mm) width of the bottom of the backboard; mounted to aluminum framework in no less than 10 places.
      f. Steel Spacers: Protrude through holes in glass so rim is isolated from glass.
      g. Regulatory Requirements: Meets NCAA and NFHS standards.
      h. Padding: Backboard predrilled to allow mounting of Model BA68U Backboard padding as manufactured by IPI by Bison.

F. Goals: As manufactured by IPI by Bison.
   1. Model: BA3180S 180 degrees Breakaway Goal as manufactured by IPI by Bison.
      a. Design: Goal designed and constructed so that when downward pressure exceeding the release pressure setting is applied at any location within 90 degrees either to the left or to the right of the point on the ring farthest from the backboard, the entire ring assembly will pivot downward.
      b. Field Adjustability: Release pressure setting is field adjustable and designed with a detent style positive lock mechanism so that the ring cannot be released until the setting pressure is exceeded.
      c. Ring: Constructed of 5/8 inch (16 mm) diameter carbon steel.
      d. Tubular Segments: Spaced and welded a full 360 degrees around the lower surface of the 5/8 inch (16 mm) ring to allow the goal net to be securely attached without fasteners by means of a single nylon coated cable.
      e. Heat Treatment: Steel components that come in contact with other steel components during release of the ring assembly shall be heat treated to a minimum depth of 0.020 inch (0.5 mm), hardness of 50 on Rockwell C scale.
      f. Release Mechanism: Isolated from player contact and pinch point risk by means of a steel cover plate.
      g. Hole Pattern BA3180S shall have a 5 x 4 inches (127 x 102 mm) hole pattern.
      h. Regulatory Requirements: Meets NCAA, FIBA and NFHS standards.
      i. Nets: Anti-whip white nylon.
      j. Hardware: Zinc plated grade 5 mounting hardware, 2 net attachment cords.
      k. Finishing: Goal has an orange powder coated finish.

G. Backboard Padding: Bolt-on backboard padding for bottom edge and corners of backboard to provide safety protection to meet NCAA and NFHS requirements as manufactured for IPI by Bison.
   1. Model: BA68U padding.
   2. Construction: Cellular construction with skin integral to the cushion using a self-skinning molding process, 0.060 inch (1.5 mm) average skin thickness; a steel track

molded into the padding shall provide rigidity and strength to the mounting system.
3. Tear Strength: Minimum 125 psi (862 kPa).
4. Hardware: Provided by manufacturer.
5. Vinyl Cover Color: As selected from manufacturer's standard colors.

2.3 GYMNASIUM DIVIDER CURTAINS

A. Gymnasium Divider Curtains: Model IP880 Roll-Up Gymnasium Divider Curtains as manufactured by IPI by Bison.
1. Fire Resistance:
a. UL 214 and NFPA 701: Rated as self-extinguishing.
b. California State Fire Marshall: Registered as approved.
2. Opening Height, Width: As scheduled and indicated on Drawings.
3. Design: Rolling action.
4. Hoist Belts: 3 inches (76 mm) wide nylon belt, attached to top batten pipe; run down the face of curtain; below the steel pipe; up the back side of curtain and terminate at individual drums formed on the drive pipe shaft above the curtain.
5. Hoist Belt Spacing: Not exceeding 16 ft (4877 mm) on center.
6. Drive Pipe Shafts: 2-3/8 inches (60 mm) diameter.
7. Bottom Tube Battens: 13-1/2 inches (89 mm) diameter steel tubes.
8. Top Tube Battens: 1-5/8 inches (41 mm) diameter, suspended from each drive pipe support assembly with adjustable 2/0 chain.
9. Electrical Operation of Drive Shaft:
a. Power Unit: Compensating type, 115 Volt, single phase, reversible motor with built-in thermal overload protection.
b. Speed Reduction: Through load holding worm gears.
c. Remote Control Operation: Includes integral limit switch to control upper and lower limit of curtain travel.
d. Horsepower: As scheduled and indicated on Drawings.
e. Lower Curtain Height: As scheduled and indicated on Drawings.
f. Materials: Flame retardant polyester reinforced solid vinyl fabric with anti-bacterial and fungi-resistant treatment.
g. Seams and Outer Edge Hems: Electronically welded, 1 inch (25 mm) full contact weld.
h. Vinyl Fabric: 18 ounces per square yard.
i. Vinyl Color: As indicated on the Drawings.
10. Hoist Model DC974LR ¾” with Key Pad control.
11. Upper Curtains:
a. Materials: VCP mesh, with woven vinyl encapsulated polyester yarns, 50 percent plus open grid weave.
b. Top Pocket: Solid vinyl fabric welded to top edge of VCP mesh to form pocket hem that accommodates tube batten for curtain support.
c. Curtain Color: As selected from manufacturer's standard colors.

B. Electrically Operated Controls: As manufactured for IPI by Bison.
1. Controls: Standard, 3 position key switch, momentary contact wall control switch to lower, raise, and stop curtains.
a. Keys: Two keys provided to Owner for each lock.

b. Cover Plates: Stainless steel, with up/down markings.

2. Controls: Model IPGCPLUS Gym Command Plus Programmable Touch Screen Operating System for Gymnasiums as manufactured for IPI by Bison.
   a. Flush wall mounted 7 inch (178 mm) diagonal touch screen.
   b. UL listed 12 x 16 x 4 inch (305 x 406 x 102 mm) steel relay boxes each capable of controlling up to 8 devices. Requires 120-volt, 30-amp single phase power source.
   c. Use multiple relay boxes for operating additional devices.
   d. Control system allows for operation of single or multiple groups of devices at the same time.
   e. Easily programmable in the field.
   f. Touch screens are password protected.
   g. Allows installation of multiple touch screens.
3. Controls: Model IPGCS7 Gym Command 7 Control System as manufactured for IPI by Bison.
   a. Touch Screens: Wall mounted, 115 volt, UL Listed, 7 inches (178 mm), color, high resolution touch screen.
   b. Control Panels: 115 volt hardwire from control panel to each device.
   c. Operations: Factory programmed but field reprogrammable.
   d. Device Capacity: 8.
   e. Device Capacity: 16.
   f. Device Capacity: 24.
   g. Device Capacity: 32.
   h. Device Capacity: As scheduled and indicated on Drawings.
4. Controls: Goal Tender II Wireless Remote Transmitter and Receiver Systems for Gymnasium Device Operation as manufactured by LynRus for IPI by Bison.
   a. Transmitters: Model IPGTS99LR as manufactured by IPI by Bison; handheld 9-volt battery, operated operates up to 99 separate devices.
   b. Receivers: One IPGTS1LR required for each electric device.
5. Controls: As scheduled and indicated on Drawings.

2.4 VOLLEYBALL SYSTEMS

A. Volleyball Systems: Match Point Aluminum Series as manufactured by IPI by Bison.
   1. Model: VB6000NS aluminum volleyball/tennis/pickleball system without floor sockets as manufactured by IPI by Bison.
      a. Applications: Suitable for setup for a single court.
      b. Description: 2 standards, 1 with winch and 1 without.
   2. Model: VB6000 aluminum volleyball/tennis/pickleball system with extruded aluminum floor sockets as manufactured by IPI by Bison.
      a. Applications: Suitable for setup for a single court.
      b. Description: 2 standards, 1 with winch and 1 without; 2 floor sockets.
   3. Model: VB6002NS side-by-side aluminum volleyball/tennis/pickleball systems without floor sockets as manufactured by IPI by Bison.
      a. Applications: Suitable for setup for multiple courts.
      b. Description: 3 standards, 2 with winches, 1 center standard without a winch.
   4. Model: VB6002 side-by-side aluminum volleyball/tennis/pickleball systems with extruded aluminum floor sockets as manufactured by IPI by Bison.

a. Application: Suitable for setup for multiple courts.
b. Description: 3 standards, 2 with winches, 1 center standard without a winch; 3 floor sockets.

5. Floor Plates: Machined cast brass with a hinged lid.
6. Standards/Posts:
   a. Net adjusting tracks running the full length of poles.
   b. Materials: 6063-T6 aluminum extrusion shapes.
   c. Outside Diameter: 3-1/2 inches (89 mm).
   d. Finishing: Textured silver/gray powder coating.
   e. Tops and Bottoms of Poles: Fitted with plastic floor protective inserts.
   f. Height Adjustment Mechanisms: 1 threaded hand knob per standard.
   g. Non-Winch Standards: 39 lbs (17.7 kg) maximum.
   h. Winch End Standards: 43 lbs (19.5 kg) maximum.
7. Winches:
   a. Machined aluminum body winch winds 2 inches (51 mm) wide nylon webbing strap to tension net top rope. Winch carries a 10-year warranty.
   b. Shafts: Rotate in sealed ball bearings.
   c. Worm Gears: 26 to 1 ratio, case hardened steel, mounted on one pole.
   d. Handles: Non-removable, folding.
8. Nets: Black polypropylene, 0.14 inches (3.5 mm) knotless woven webbing, includes zippered net storage bag and official boundary antennas.
   a. Height: 39.4 inches (1000 mm).
   b. Top Ropes: Kevlar.
   c. Bottom Ropes: Polypropylene, tightened with ratchet style rope tensioners.
   d. Top and Bottom Ropes: Covered for player safety between standards and net edges by foam padding with white vinyl cover, at least 1/2 inch (13 mm) thick.
   e. Side Tapes: Tightened by no less than two ratchet style rope tensioners.
9. Padding: High-density foam with vinyl cover.
   a. Height: 72 inches (1829 mm) minimum.
   b. Thickness: 1-1/2 inches (39 mm).
   c. Letter printing or custom graphics available.
   d. Vinyl Cover Color: As scheduled or indicated on the Drawings.
10. Officials Stand Platform: See "Officials Stand Platform" Paragraph under this Article.

B. Officials Stand Platforms: As manufactured by IPI by Bison.
   1. Model: VB76 Freestanding Folding Volleyball Official Platform with Padding as manufactured by IPI by Bison.
      a. Platforms: 1 inch (25 mm) diameter, 11 gauge steel tube, fully welded except as required to allow folding; silver/gray powder coating.
      b. Design: Folds for transport and storage without tools by means of two pull pins.
      c. Floor Pads: When in use platform rests on non-marking, anti-skid floor pads.
      d. Wheels: Non-marking, facilitates transport and storage when folded, not in use.
      e. Platform Width: No less than 19 inches (483 mm) in width and 25 inches (635 mm) in depth and have handrails extending no less than 34 inches (864 mm) above the platform.

f. Padding: Applied to hard surfaces to a height of 72 inches (1829 mm), 1 inch (25 mm) thick high-density foam.
1) Vinyl Cover Color: As selected from manufacturer's standard colors.

2.5 GYMNASIUM WALL PADDING

A. Gymnasium Padding: Safety padding for walls, corners, columns, doors and stages as manufactured by IPI by Bison.
1. Protector Wall Padding as manufactured by IPI by Bison.
a. Foam: Polyurethane.
1) Compliance:
a) California Fire Code TIB 117 Section 3 and FMVSS 302.
b) ISO 20743 Antibacterial Standards.
c) AATCC 30 Antifungal Standards.
2) Indentation Load Deflection (ILD): ASTM D3574.
a) Test B1: 43-53 lbs per 50 cubic inches.
b) Test A: 1.50 lbs per cubic foot density.
3) Thickness: 3 inch (76 mm).
b. Cover: Vinyl, 14 ounces per square yard treated for mildew and UV protection.
1) Tear Strength, ASTM D2261: 92 x 83 lbs per inch (16.1 x 14.5 N per mm).
2) Fire Resistance: Conforms to NFPA 701 CSFM and Class A ASTM E84.
c. Wood Backed Padding: Mounted on 7/16 inch (11 mm) OSB composite board with foam attached to OSB with water based adhesive.
d. Height: As scheduled and indicated on Drawings.
e. Total Lineal Feet: As scheduled and indicated on Drawings.
2. Firewall Wall Padding as manufactured by IPI by Bison.
a. Fire Resistance: Assembled padding tested and passing NFPA 286 and ASTM E84 Class A fire test for wall covering.
b. Foam: Neoprene.
1) Compliance: California Fire Code TIB 117.
2) Indentation Load Deflection (ILD): ASTM D3574.
a) Test B1: 35 plus or minus 10 lbs.
b) Test A: 6.2 lbs per cubic foot density.
3) Thickness: 3 inch (76 mm).
c. Cover: Leather grain vinyl, 16 oz per sq yd (542.5 gram per sq m), treated with anti-mildew and UV protection.
1) Tear Strength: 75 x 75 lbs per inch (13.1 x 13.1 N/mm).
2) Fire Resistance: Conforms to NFPA 701 CSFM and Class A ASTM E84.
d. Height: As scheduled and indicated on Drawings.
e. Total Lineal Feet: As scheduled and indicated on Drawings.
3. Type: Solid color vinyl.
a. .
4. Type: As scheduled and indicated on Drawings.
5. Mounting Style: Hidden Z-track.

2.6 PICKLEBALL NET POSTS

A. Same size as the Volleyball insert.

2.7 PICKLEBALL NET ANCHOR

A. Net anchor shall be 1-5/8 to 2-inch diameter, 10-gauge galvanized steel with stainless steel pin.
B. Install net anchor as shown in detail on the plans.

2.8 PICKLEBALL NET

A. Net body shall be 3.0mm braided polyethylene rope in 1-3/4" knotted mesh.
B. Net dimensions shall be 30"-32" height, 21'-7" to 21-9" length.
C. Headband shall be white vinyl, folded and tucked, UV treated, with 4 rows of bonded thread interlocking stitching with built-in grommets.
D. Sideband shall be 2.5" black vinyl with built-in brass grommets, sewn pocket, and fiberglass rods.
E. Bottom band shall be 2.5" black vinyl with built-in brass grommets.
F. The net cable shall be 27' (+/- 2") vinyl coated steel.
G. The net shall include a center strap and double ended Stainless Steel snap.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Prepare substrates using the methods recommended by the manufacturer for achieving best result for the substrates under project conditions.

B. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
   1. Secure to substrate with fasteners of type, size and spacing as recommended by manufacturer.
   2. Remove protective wrappings and labels and wash surfaces.
   3. Do not use harsh cleaning materials or methods that would damage finish.
   4. Repair minor damages to finish in accordance with manufacturer's instructions.
   5. Remove and replace damaged components that cannot be successfully repaired, as determined by Architect.

B. Volleyball Equipment:
   1. Coordinate layout of volleyball courts and location of floor sockets with installation of floor surfacing and application of game lines and boundaries.
   2. Coordinate location of sleeves and required size of sleeve footing with trade responsible for placing concrete.
   3. Provide sleeves in adequate time to allow casting in concrete floor slabs.
   4. Ensure that setting of sleeve compensates for type of floor finish to be provided.
   5. Ensure that sleeves for each volleyball court are spaced correctly.
   6. Insert standards into floor socket as applicable and attach nets, boundary markers, antennae, judge's platform, protection padding, and other accessories.
   7. Verify that all items have been provided and are as required for complete installation.
   8. Verify that standards are vertical and rigid. Verify net height settings are accurate.
   9. Provide missing items and correct deficiencies.

C. Basketball Backstops:
   1. Coordinate basketball backstop support with construction of and ceiling framing to ensure proper support and method of attachment.
   2. Install backstops, backboards, and goals plumb, level, and rigid.
   3. Coordinate support of backstops to ensure proper distribution of loads and adequacy of attachment points. Provide additional structural framing members as required.
   4. After installing, verify that mounting height is correct.
   5. Operate a minimum of three times to ensure proper lifting and lowering. Adjust as required to ensure smooth operation and accurate positioning.
   6. Coordinate electrical requirements to ensure proper power source, conduit, wiring, and boxes for keyed switches.

3.3 DEMONSTRATION AND TRAINING

A. Demonstrate to Owner's designated representative complete operation and required maintenance of installed equipment.

3.4 CLEANING AND PROTECTION

A. Clean and protect products in accordance with the manufacturer's recommendations.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Indoor, Outdoor Sporting Goods Equipment:
   1. Bleachers.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data:
   1. Manufacturer's data sheets on each product to be used.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Typical installation methods.

C. Verification Samples: Two representative units of each type, size, pattern, and color.

D. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five Years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum two Years documented experience with projects of similar scope and complexity.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.5 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.

B. Protect from damage due to weather, excessive temperature, and construction operations.

1.7 PROJECT CONDITIONS

A. Maintain environmental temperature, humidity, and ventilation conditions within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

A. Manufacturer's standard Limited warranty unless indicated otherwise.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Bison, Inc., Tip and Tow which is located at: 603 L St.; Lincoln, NE 68508; Toll Free Tel: 800-247-7668; Fax: 800-638-0698; Email:request info (orderdesk@bisoninc.com); Web:https://bisoninc.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.

2.2 Framework:

Prefabricated aluminum angle spaced at 6' - 0" intervals joined by means of aluminum angle cross bracing.

A. Shop Connections:

Welded to meet AWS standards and local code requirements.

B. Joint Sleeve Assembly:

Internal splices, where required shall be two per joint, and shall penetrate the joint a minimum of 8” in each direction and be riveted at one end only to allow for contraction and expansion.

C. Rise and Depth Dimensions:

6” vertical rise and 24” tread depth, Seat height is 11-1/2” above its respective tread.

D. Seats:

Nominal 2” x 12” anodized aluminum with anodized end caps.

E. Treads:

Nominal one (1) 2” x 10” mill finish aluminum with anodized end caps on all rows. Each unit will have high grade swivel casters with 5" non-marring wheels and non-marring foot pads.

F. Framework:

Aluminum:

Structural fabrication with aluminum alloy 6061-T6 mill finish. Each frame shall be unit-welded, using metal inert gas method, under guidelines by the American Welding Society. After fabrication all steel is hot dipped galvanized to ASTM

A-123 specifications. All crossbracing and horizontal bracing shall be aluminum alloy 6061-T6 mill finish.

G. Extruded Aluminum:

Seat Planks:

Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II with a wall thickness nominally .078" for impact and deformation resistance.

Tread and Riser Planks:

Aluminum alloy 6063-T6, mill finish. With a wall thickness nominally .078" for impact and deformation resistance.

H. Accessories:

Channel End Caps:

Aluminum alloy 6063-T6, clear anodized 204R1,AA-M10C22A31,Class II.

Hardware:

Bolts and Nuts shall be hot dipped galvanized.

Hold Down Clip Assembly:

Aluminum alloy 6063-T6 mill finish.

Joint Sleeve Assembly:

Aluminum alloy 6061-T6, mill finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until the substrates have been properly constructed and prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.

3.4 CLEANING AND PROTECTION

A. Clean products in accordance with the manufacturers recommendations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 2413
ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes roller shades.

1.2 ACTION SUBMITTALS

A. Compliance Letter: Submit completed Compliance Letter attesting that products and/or materials will be provided and installed according to Specifications and requirements of Division 01 Sections, including meeting requirements of federal, state, and local codes, laws, and ordinances, and current applicable industry standards.

B. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

C. Samples for Verification: For each colored component of each type of shade indicated.

1. Shade Material: 2 swatches, not less than 12 inches square of fabric, from same dye lot used for the Work. Show complete pattern repeat; mark top and face of material.
2. Valance/Fascia: Full size extrusion, not less than 12 inches long.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals. Include the following:

1. Methods for maintaining roller shades and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
3. Operating hardware.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed installation of roller shades of similar material, design and extent to those indicate for this Project, and whose work has a successful record of in-service performance..

B. Source Limitations: Obtain roller shades through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test

method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Passes NFPA 701.

D. Anti-Microbial Characteristics: ASTM G 21, "No Growth" for fungi ATCC 9642, ATCC 9644, ATCC 9645.

E. Product Standard: Provide roller shades complying with WCMA A 100.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before placing order and fabrication and indicate measurements on Shop Drawings. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 WARRANTY

A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating 25 year limited warranty.

B. Standard Shadecloth: Manufacturer's standard 25 year warranty.

C. Roller Shade Installation: Special installer's warranty: 1 year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 - PRODUCTS

2.1 ROLLER SHADES – RS1

A. Basis-of-Design Product: Subject to compliance with requirements, provide MechoShade Systems, Inc.; "Mecho/5", manually operated, or a comparable product by one of the following:

1. Custom Laminations, Inc.
2. Draper Inc..
3. Hunter Douglas, Inc.; Hunter Douglas Window Fashions Division.
4. Levolor; Levolor-Kirsch Window Fashions; a Newell Rubbermaid Company.
5. Lutron Shading Solutions by VIMCO.

B. Shade Band Material: Single-thickness, non-raveling, PVC coated fiberglass.

1. Fabric Width: 72 inches, or as required for seamless covering of window.
2. Pattern and Color : Selected by Architect from manufacturer's full range for listed style.
3. Material Solar Optical Properties: Blackout.
4. Material Openness Factor: Zero percent.
5. UV Blockage: 100 percent.
6. Bottom Hem: Straight.
7. Trim: As indicated by manufacturer's designation for style and color.

C. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets; with manufacturer's standard method for attaching shade material. Provide capacity for one roller shade band per roller, unless otherwise indicated on Drawings.

D. Direction of Roll: Regular, from back of roller.

E. Mounting Brackets: Galvanized or zinc-plated steel.

F. Fascia: L-shaped, extruded aluminum; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; length as indicated in a window treatment schedule; removable design for access.

1. Provide with matching end caps.

G. Top/Back Cover: L-shaped; material and finish to match fascia; combining with fascia and end caps to form a six-sided headbox enclosure sized to fit shade roller and operating hardware inside.

H. Bottom Bar: Steel or extruded aluminum, with plastic or metal capped ends. Provide concealed, by pocket of shade material, internal-type bottom bar with concealed weight bar as required for smooth, properly balanced shade operation.

I. Mounting: Inside mounting permitting easy removal and replacement without damaging roller shade or adjacent surfaces and finishes.

J. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard for anchoring roller shade bottom in place and keeping shade band material taut.

K. Audiovisual Light-Blocking Shades: Designed for eliminating all visible light gaps when shades are fully closed; fabricated from blackout shade band material with fascia and bottom bar extended and formed for light-tight joints among shade components and between shade components and adjacent construction.

1. Side Channels, Sill Channel or Angle, and Perimeter Seals: Manufacturer's standard design, including sill light seal attached to bottom bar, for eliminating light gaps when shades are closed.
2. Shade Band Retention System: Manufacturer's standard design for guiding shade band material through range of travel and holding shade band flat with edges of material within side channels.

L. Shade Operation: Manual; with continuous-loop bead-chain, clutch, and cord tensioner and bracket lift operator.

1. Pull: Manufacturer's standard hand-grip engaged pull.
2. Position of Clutch Operator: Right side of roller, as determined by hand of user facing shade from inside, unless otherwise indicated in a window treatment schedule, or if conflicts are observed during field measurement and verification prior to placing order.
3. Clutch: Capacity to lift size and weight of shade; sized to fit roller or provide adaptor.
4. Lift-Assist Mechanism: Manufacturer's standard spring assist for balancing roller shade weight and lifting heavy roller shades.
5. Loop Length: Full length of roller shade.
6. Bead Chain: Nickel-plated chain rated to 90 pounds minimum breaking strength.
7. Cord Tensioner Mounting: Sill.
8. Operating Function: Stop and hold shade at any position in ascending or descending travel.

2.2 ROLLER SHADE FABRICATION

A. Product Description: Roller shade consisting of a roller, a means of supporting the roller, a flexible sheet or band of material carried by the roller, a means of attaching the material to the roller, a bottom bar, and an operating mechanism that lifts and lowers the shade.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.

1. Lifting Mechanism: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Shade Units Installed Between (Inside) Jambs: Edge of shade not more than 1/4 inch from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of shade, for supporting fascia, headbox, roller, and operating hardware and for hardware position and shade mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, apply manufacturer's standard baked finish comp.

G. lying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

H. Colors of Metal and Plastic Components Exposed to View: As selected by Architect from manufacturer's full range, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field verify dimension of windows prior to placing order. Do not place order based on dimensions found on Drawings.

B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances,and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions, and located so shade band is not closer than 1 inch to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain roller shades.

END OF SECTION 12 2413

SECTION 12 2413
ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes roller shades.

1.2 ACTION SUBMITTALS

A. Compliance Letter: Submit completed Compliance Letter attesting that products and/or materials will be provided and installed according to Specifications and requirements of Division 01 Sections, including meeting requirements of federal, state, and local codes, laws, and ordinances, and current applicable industry standards.

B. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

C. Samples for Verification: For each colored component of each type of shade indicated.

1. Shade Material: 2 swatches, not less than 12 inches square of fabric, from same dye lot used for the Work. Show complete pattern repeat; mark top and face of material.
2. Valance/Fascia: Full size extrusion, not less than 12 inches long.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals. Include the following:

1. Methods for maintaining roller shades and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
3. Operating hardware.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed installation of roller shades of similar material, design and extent to those indicate for this Project, and whose work has a successful record of in-service performance..

B. Source Limitations: Obtain roller shades through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test

method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Passes NFPA 701.

D. Anti-Microbial Characteristics: ASTM G 21, "No Growth" for fungi ATCC 9642, ATCC 9644, ATCC 9645.

E. Product Standard: Provide roller shades complying with WCMA A 100.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before placing order and fabrication and indicate measurements on Shop Drawings. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 WARRANTY

A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating 25 year limited warranty.

B. Standard Shadecloth: Manufacturer's standard 25 year warranty.

C. Roller Shade Installation: Special installer's warranty: 1 year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 - PRODUCTS

2.1 ROLLER SHADES – RS1

A. Basis-of-Design Product: Subject to compliance with requirements, provide MechoShade Systems, Inc.; "Mecho/5", manually operated, or a comparable product by one of the following:

1. Custom Laminations, Inc.
2. Draper Inc..
3. Hunter Douglas, Inc.; Hunter Douglas Window Fashions Division.
4. Levolor; Levolor-Kirsch Window Fashions; a Newell Rubbermaid Company.
5. Lutron Shading Solutions by VIMCO.

B. Shade Band Material: Single-thickness, non-raveling, PVC coated fiberglass.

1. Fabric Width: 72 inches, or as required for seamless covering of window.
2. Pattern and Color : Selected by Architect from manufacturer's full range for listed style.
3. Material Solar Optical Properties: Blackout.
4. Material Openness Factor: Zero percent.
5. UV Blockage: 100 percent.
6. Bottom Hem: Straight.
7. Trim: As indicated by manufacturer's designation for style and color.

C. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets; with manufacturer's standard method for attaching shade material. Provide capacity for one roller shade band per roller, unless otherwise indicated on Drawings.

D. Direction of Roll: Regular, from back of roller.

E. Mounting Brackets: Galvanized or zinc-plated steel.

F. Fascia: L-shaped, extruded aluminum; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; length as indicated in a window treatment schedule; removable design for access.

1. Provide with matching end caps.

G. Top/Back Cover: L-shaped; material and finish to match fascia; combining with fascia and end caps to form a six-sided headbox enclosure sized to fit shade roller and operating hardware inside.

H. Bottom Bar: Steel or extruded aluminum, with plastic or metal capped ends. Provide concealed, by pocket of shade material, internal-type bottom bar with concealed weight bar as required for smooth, properly balanced shade operation.

I. Mounting: Inside mounting permitting easy removal and replacement without damaging roller shade or adjacent surfaces and finishes.

J. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard for anchoring roller shade bottom in place and keeping shade band material taut.

K. Audiovisual Light-Blocking Shades: Designed for eliminating all visible light gaps when shades are fully closed; fabricated from blackout shade band material with fascia and bottom bar extended and formed for light-tight joints among shade components and between shade components and adjacent construction.

1. Side Channels, Sill Channel or Angle, and Perimeter Seals: Manufacturer's standard design, including sill light seal attached to bottom bar, for eliminating light gaps when shades are closed.
2. Shade Band Retention System: Manufacturer's standard design for guiding shade band material through range of travel and holding shade band flat with edges of material within side channels.

L. Shade Operation: Manual; with continuous-loop bead-chain, clutch, and cord tensioner and bracket lift operator.

1. Pull: Manufacturer's standard hand-grip engaged pull.
2. Position of Clutch Operator: Right side of roller, as determined by hand of user facing shade from inside, unless otherwise indicated in a window treatment schedule, or if conflicts are observed during field measurement and verification prior to placing order.
3. Clutch: Capacity to lift size and weight of shade; sized to fit roller or provide adaptor.
4. Lift-Assist Mechanism: Manufacturer's standard spring assist for balancing roller shade weight and lifting heavy roller shades.
5. Loop Length: Full length of roller shade.
6. Bead Chain: Nickel-plated chain rated to 90 pounds minimum breaking strength.
7. Cord Tensioner Mounting: Sill.
8. Operating Function: Stop and hold shade at any position in ascending or descending travel.

2.2 ROLLER SHADE FABRICATION

A. Product Description: Roller shade consisting of a roller, a means of supporting the roller, a flexible sheet or band of material carried by the roller, a means of attaching the material to the roller, a bottom bar, and an operating mechanism that lifts and lowers the shade.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.

1. Lifting Mechanism: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Shade Units Installed Between (Inside) Jambs: Edge of shade not more than 1/4 inch from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of shade, for supporting fascia, headbox, roller, and operating hardware and for hardware position and shade mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, apply manufacturer's standard baked finish comp.

G. lying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

H. Colors of Metal and Plastic Components Exposed to View: As selected by Architect from manufacturer's full range, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field verify dimension of windows prior to placing order. Do not place order based on dimensions found on Drawings.

B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances,and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions, and located so shade band is not closer than 1 inch to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain roller shades.

END OF SECTION 12 2413

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Sheet metal flashing.
3. Thermal insulation.
4. Accessories.

B. Related Section:

1. Division 07 Section “Standing Seam Metal Roof Panels.”
2. Division 07 Section “Formed Metal Wall and Soffit Panels.”

1.2 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

B. Shop Drawings: For metal building system components. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Metal Building System Certificates: For each type of metal building system, from manufacturer.

1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

a. Name and location of Project.
b. Order number.
c. Name of manufacturer.
d. Name of Contractor.
e. Building dimensions including width, length, height, and roof slope.
f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
g. Governing building code and year of edition.

h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
k. AISC Certification for Category MB: Include statement that metal building system and components were designed and produced in an AISC-Certified Facility by an AISC-Certified Manufacturer.

C. Material test reports.

D. Source quality-control reports.

E. Field quality-control reports.

F. Warranties: Sample of special warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.

1. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components in an AISC-Certified Facility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.

E. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

F. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide Alliance Steel, Inc.

B. Other Available Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Butler Manufacturing Company; a BlueScope Steel company.
2. CBC Steel Buildings; Division of Magnatrax Corp.
3. Ceco Building Systems; Division of NCI Building Systems, L.P.
4. Gulf States Manufacturers, Inc.; Division of Magnatrax Corp.
5. Inland Buildings; Subsidiary of Behlen Mfg. Co.
6. Mid-West Steel Building Company; Division of NCI Building Systems, L.P.
7. Nucor Building Systems.
8. Olympia Steel Building Systems.
9. Star Building Systems; an NCI company.
10. VP Buildings; a United Dominion company.
11. Vulcan Steel Structures, Inc.

2.2 METAL BUILDING SYSTEM PERFORMANCE

A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Metal building systems shall be designed according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: As indicated on Drawings.
2. Design Loads: As required by IBC 2018 and ASCE/SEI 7.
3. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:

    a. Purlins and Rafters: Vertical deflection of 1/240 of the span.
    b. Girts: Horizontal deflection of 1/240 of the span.
    c. Metal Roof Panels: Vertical deflection of 1/240 of the span.
    d. Metal Wall Panels: Horizontal deflection of 1/240 of the span.
    e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.

4. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:

    a. Lateral Drift: As indicated on General Notes plan page.

5. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.

C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

D. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STRUCTURAL-STEEL FRAMING

A. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating.

B. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide zinc-plated or hot-dip galvanized bolts for structural-framing components that are galvanized.

C. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

2.4 THERMAL INSULATION

A. Thermal Insulation Performance Criteria: Refer to sheet G-002 for min. **R-VALUES.**

1. Wall: R-value: Provided as batt insulation between light gauge framing infill.
2. Roof: R- value: 30 minimum, nominally 8 inches thick, or installed in 2 courses of R-19 + R11 LS.

B. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread/smoke index of 25/50 or less.

1. R-Value (Roof): 30, 2 course. Facing: Vinyl, color: black, used in conjunction with 1 course unfaced insulation laid above.
2. R-Value (Walls): 19, 1 course. Facing: Vinyl, color: White and black. See plans for locations.

C. Unfaced Metal Building Insulation: ASTM C 991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread/smoke index of 25/50 or less.

1. R-Value (Roof): 13, 1 course, used in conjunction with 1 course faced insulation laid below.
2. R-Value (Walls): None.

D. Retainer Strips: 26 gauge galvanized steel, colored to match insulation facing.

E. Thermal Spacer Blocks: R value minimum 3.5, applied to top of purlins to offset compressing draped glass-fiber blanket insulation.

2.5 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

2.6 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate product.

B. Testing: Test and inspect shop connections for metal buildings according to the following:

1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

C. Product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

2.7 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

D. Secondary Framing: Shop fabricate framing components to size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

PART 3 - EXECUTION

3.1 ERECTION OF STRUCTURAL FRAMING

A. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Locate canopy framing as indicated.
4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

B. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

C. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

D. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.2 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform special inspections.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Tests and Inspections:

1. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
2. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:

a. Liquid Penetrant Inspection: ASTM E 165.

b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

D. Product will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 13 3419

SECTION 14 24 00
HYDRAULIC PASSENGER ELEVATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Hydraulic passenger elevators as shown and specified. Elevator work includes:
   1. Standard pre-engineered hydraulic passenger elevators.
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Operation and control systems.
   4. Jack(s).
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
   1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
   2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
   3. Division 4 Masonry: Installing inserts, sleeves and anchors in masonry.
   4. Division 5 Metals:
      a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
      b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
   5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
   6. Division 16 Sections:
      a. Providing electrical service to elevators, including fused disconnect switches.
      b. Emergency power supply, transfer switch and auxiliary contacts.
      c. Heat and smoke sensing devices.
      d. Convenience outlets and illumination in control room, hoistway and pit.
   7. Division 22 Plumbing
      a. Sump pit and oil interceptor.
   8. Division 23 Heating, Ventilation and Air Conditioning
      a. Heating and ventilating hoistways and/or control room.

C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Part 3 for hydraulic elevators. State or local requirements must be used if more stringent.

The cost of this work is not included in the TK Elevator's proposal, since it is a part of the building construction.

1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.
2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2'' at any point.
4. Elevator hoistways shall have barricades, as required.
5. Install bevel guards at 75° on all recesses, projections or setbacks over 2'' (4'' for A17.1 2000 areas) except for loading or unloading.
6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical forces from rails and buffers.
8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42'' minimum, (48'' minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.
9. Machine room to be enclosed and protected.
10. Machine Room temperature must be maintained between 55º and 90º F.
11. If machine room is remote from the elevator hoistway, clear access must be available above the ceiling or metal/concrete raceways in floor for oil line and wiring duct from machine room.
12. Access to the machinery space and machine room must be in accordance with the governing authority or code.
13. Provide an 8" x 16" cutout through machine room wall, for oil line and wiring duct, coordinated with elevator contractor at the building site.
14. All wire and conduit should run remote from the hoistways.
15. When heat, smoke or combustion sensing devices are required, connect to elevator control cabinet terminals. Contacts on the sensors should be sided for 12 volt D.C.
16. Install and furnish finished flooring in elevator cab.
17. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.
18. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.

19. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
20. To maintain legal fire rating (masonry construction), door frames are to be anchored to walls and properly grouted in place.
21. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.
22. General Contractor shall fill and grout around entrances, as required.
23. Elevator sill supports shall be provided at each opening.
24. All walls and sill supports must be plumb where openings occur.
25. For applications with jack hole, free and clear access to the elevator pit area for the jack hole-drilling rig is required.
26. Where jack hole is required, remove all spoils from jack hole drilling.
27. When not provided by Elevator Contractor, jack hole shall accommodate the jack unit. If required the jack hole is to be provided in strict accordance with the elevator contractor's shop drawings.
28. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.
29. A light switch and fused disconnect switch for each elevator should be located inside the machine room adjacent to the door, where practical, per the National Electrical Code (NFPA No. 70).
30. For signal systems and power operated door: provide ground and branch wiring circuits, including main line switch.
31. For car light and fan: provide a feeder and branch wiring circuits, including main line switch.
32. Wall thickness may increase when fixtures are mounted in drywall. These requirements must be coordinated between the general contractor and the elevator contractor.
33. Provide supports, patching and recesses to accommodate hall button boxes, signal fixtures, etc..
34. Locate telephone and convenience outlet on control panel.

1.02 SUBMITTALS

A. Product data: When requested, the elevator contractor shall provide standard cab, entrance and signal fixture data to describe product for approval.

B. Shop drawings:
   1. Show equipment arrangement in the corridor, pit, and hoistway and/or optional control room. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
   2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.

3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
4. Indicate electrical power requirements and branch circuit protection device recommendations.

C. Powder Coat paint selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

D. Plastic laminate selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

E. Metal Finishes: Upon request, standard metal samples provided.

F. Operation and maintenance data. Include the following:
1. Owner's manuals and wiring diagrams.
2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer with minimum 15 years of experience in manufacturing, installing, and servicing elevators of the type required for the project.
1. The manufacturer of machines, controllers, signal fixtures, door operators cabs, entrances, and all other major parts of elevator operating equipment.
a. The major parts of the elevator equipment shall be manufactured by the installing company, and not be an assembled system.
2. The manufacturer shall have a documented, on-going quality assurance program.
3. ISO-9001:2000 Manufacturer Certified
4. ISO-14001:2004 Environmental Management System Certified
5. LEED Gold certified elevator manufacturing facility.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than 15 years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
1. ASME A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
2. Building Code: National.
3. NFPA 70 National Electrical Code.
4. NFPA 80 Fire Doors and Windows.
5. Americans with Disabilities Act - Accessibility Guidelines (ADAAG)
6. Section 407 in ICC A117.1, when required by local authorities

7. CAN/CSA C22.1 Canadian Electrical Code
8. CAN/CSA B44 Safety Code for Elevators and Escalators.
9. California Department of Public Health Standard Method V1.1–2010, CA Section 01350

D. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing:

1. Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
2. Arrange for inspections and make required tests.
3. Deliver to the Owner upon completion and acceptance of elevator work.

F. Sustainable Product Qualifications:
1. Environmental Product Declaration:
   a. GOOD: If Product Category Rules (PCR) are not available, produce a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope.
   b. BEST: If Product Category Rules (PCR) are available, produce and publish an Environmental Product Declaration (EPD) based on a critically reviewed life-cycle assessment conforming to ISO 14044, with external verification recognized by the EPD program operator.
2. Material Transparency:
   a. GOOD: Provide Health Product Declaration at any level
   b. BETTER: Provide Health Product Declaration (HPD v2 or later). Complete, published declaration with full disclosure of known hazards, prepared using the Health Product Declaration Collaborative's "HPD builder" on-line tool.
   c. BEST: Cradle to Cradle Material Health Certificate v3, Bronze level or higher.
3. LEED v4 – Provide documentation for all Building Product Disclosure AND Optimization credits in LEED v4 for product specified.
4. Living Building Challenge Projects: Provide Declare label for products specified.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufacturing shall deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

1.05 PROJECT CONDITIONS

A. Temporary Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.

B. Provide the hole for the jack unit (if required by the type of jack provided), based on excavation through normal soil or clay which can be removed by manual digging or by standard truck-mounted regular drilling unit. Provide a casing if required to retain the walls of the hole. General contractor shall remove excavation spoils deposited in the elevator pit.
    1. If a physical obstruction or hindrance is encountered below the ground surface, including boulders, rock, gravel, wood, metal, pilings, sand, water, quick sand, caves, public utilities or any other foreign material, obtain written authorization to proceed with excavating using special excavation equipment.
    2. Maintain a daily log of time and material costs involved.
    3. Elevator contractor will be compensated on a time and material basis for additional costs incurred after encountering the physical obstruction or hindrance, including the cost of the special excavation equipment.

1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months after final acceptance.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours excluding callbacks.
    1. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
    2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
    3. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Design based around TK Elevator's endura hydraulic elevator.

2.02 MATERIALS, GENERAL

A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD, and shall meet the California Department of Public Health Standard Method V1.1–2010, CA Section 01350 as mentioned in 1.03.9 of this specification.

B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes.

C. Steel:
   1. Shapes and bars: Carbon.
   2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.
   3. Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacture's standard selections.

D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacture's standard selections.

E. Flooring by others.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.

B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.

D. Guides: Slide guides shall be mounted on top and bottom of the car.

E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.

F. Jack: A jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to ensure adequate strength and freedom from leakage. Brittle material, such as gray cast

iron, is prohibited in the jack construction. Provide the following jack type: Twin post holeless telescopic 2-stage. Two jacks piped together, mounted one on each side of the car with each having two telescopic sections designed to extend in a synchronized manner when oil is pumped into the Assembly. Each jack section will be guided from within the casing or the plunger assembly used to house the section. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. Each Jack Assembly shall have a check valve built into the assembly to allow for automatically re-syncing the two plunger sections by moving the jack to its fully contracted position. The jack shall be designed to be mounted on the pit floor or in a recess in the pit floor. Each jack section shall have a bleeder valve to discharge any air trapped in the section..

G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. Provide proper viscosity grade inherently biodegradable oil as specified by the manufacturer of the power unit (see Power Unit section 2.04.G for further details)

2.04 POWER UNIT

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit consisting of the following items:
   1. An oil reservoir with tank cover.
   2. An oil hydraulic pump.
   3. An electric motor.
   4. An oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall be selected for specified speed and load.

D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
    1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
    2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
    3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
    4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.
    5. Solid State Starting: Provide an electronic starter featuring adjustable starting currents.
    6. Oil Type: Provide a zinc free, inherently biodegradable lubricant formulated with premium base stocks to provide outstanding protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

2.05 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted\knock down construction.
    1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates (where required), sight guards, and necessary hardware.
    2. Main landing door & frame finish: ASTM A1008 steel panels, factory applied powder coat finish with factory-applied powder coat finish entrance frame.
    3. Typical door & frame finish: ASTM A366 steel panels, factory applied powder coat enamel finish with factory-applied powder coat finish entrance frame.

B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
    1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
    2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
    3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

D. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

2.06 PASSENGER ELEVATOR CAR ENCLOSURE

A. Car Enclosure:
   1. Walls: Cab type TKAP, reinforced cold-rolled steel with two coats factory applied baked enamel finish, with applied vertical wood core panels covered on both sides with high pressure plastic laminate.
   2. Reveals and frieze: a. Reveals and frieze: Powder Coated
   3. Canopy: Cold-rolled steel with hinged exit.
   4. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.
   5. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with brushed stainless steel
   6. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
      a. Door Finish: Stainless steel panels: No. 4 brushed finish.
      b. Cab Sills: Extruded aluminum, mill finish.
   7. Handrail: Provide 1.5' diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, no. 4 brushed finish.
   8. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
   9. Protection pads and buttons: Not required

B. Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.07 DOOR OPERATION

A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be digital closed loop and the closed loop circuit shall give constant feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed based on its position and load. All adjustments and setup shall be through the computer based service tool. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door

operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable.

1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call.
4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed.
5. Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close.
6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault.
7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault.
8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.08 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Wrap return shall have a brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.

B. Emergency Communications System: Integral phone system provided.

C. Auxiliary Operating Panel:

D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

E. Special Equipment: Not Applicable

2.09 CONTROL SYSTEMS

A. Controller: The elevator control system shall be microprocessor based and software oriented. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

B. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

C. Emergency Power Operation: (10-DOA) Upon loss of the normal power supply, building-supplied standby power is available on the same wires as the normal power supply. Once the loss of normal power is detected and standby power is available, the elevator is lowered to a pre-designated landing and the doors are opened. After passengers have exited the elevator, the doors are closed and the car is shut down. When normal power is restored, the elevator automatically resumes operation.

D. Special Operation: Not Applicable

2.10 HALL STATIONS

A. Hall Stations, General: Buttons shall illuminate to indicate call has been registered at that floor for the indicated direction.
    1. Provide one pushbutton riser with faceplates having a brushed stainless steel finish.
        a. Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable

D. Hall lanterns: Not Applicable

E. Special Equipment:
Limited access operation: Not Applicable

2.11 MISCELLANEOUS ELEVATOR COMPONENTS

A. Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and/or control room, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
    1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.
    2. Comply with the National Electrical Code for electrical work required during installation.

B. Jack unit excavation (if required by the type of jack provided): Drill or otherwise excavate below elevator pit construction as required to install the jack unit.
    1. Install casing for jack unit.
    2. Provide HDPE jack protection system for all in ground jacks.
    3. Set casing for jack unit assembly plumb, and partially fill with water set¬tled sand, eliminating voids. Back fill depth shall be sufficient to hold the bottom of the jack in place over time.

C. Perform work with competent, skilled workmen under the direct control and supervision of the elevator manufacturer's experienced foreman.

D. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.

E. Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualification of welding operators.

F. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

G. Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.

H. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.

I. Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascia and toe guards after rough walls finished. Set sill units accurately aligned and slightly above finish floor at landings.

J. Lubricate operating parts of system, where recommended by manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless steel shall be cleaned with soap and water and dried with a non-abrasive surface; it shall not be cleaned with bleach-based cleansers.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.
    1. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1
   1. Elevator Model: endura Twinpost above-ground 2-stage
   2. Elevator Type: Hydraulic Passenger
   3. Rated Capacity: 3500 lbs.
   4. Rated Speed: 80 ft./min.
   5. Operation System: TAC32H
   6. Travel: 12'-0''
   7. Landings: 2 total
   8. Openings:
      a. Front: 2
      b. Rear: 0
   9. Clear Car Inside: 6'-8'' wide x 5'-5'' deep
   10. Inside clear height: 7'-4" standard
   11. Door clear height: 7'-0" standard
   12. Hoistway Entrance Size: 3'-6'' wide x 7'-0" high
   13. Door Type: One-speed | LH Side opening
   14. Power Characteristics: 208 volts, 3 Phase, 60 Hz.
   15. Seismic Requirements: Zone
   16. Hoistway Dimensions: 8'-4'' wide x 6'-11'' deep
   17. Pit Depth: 4'-0''
   18. Button & Fixture Style: Traditional Signal Fixtures
   19. Special Operations: None

END OF SECTION