

**CONTRACT DOCUMENTS
AND
TECHNICAL SPECIFICATIONS**

**FOR
*ROUTE 66 PARK***



**CITY OF SAPULPA
Project Manager
Michael Russell**

Prepared By

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**CONTRACT DOCUMENTS
AND
TECHNICAL SPECIFICATIONS**

FOR

Rock Creek Park Route 66 View Stop

FOR

THE CITY OF SAPULPA

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TECHNICAL SPECIFICATIONS

ADVERTISEMENT FOR BIDS

Rock Creek Park Route 66 View Stop

FOR

CITY OF SAPULPA, OKLAHOMA

Separate sealed bids for the **Rock Creek Park Route 66 View Stop Project**, for the City of Sapulpa, Oklahoma will be received by the City of Sapulpa, Oklahoma at City Hall, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066, until **2:00 P.M., May 6, 2025** for furnishing tools, materials and labor, and performing the work necessary to be done in the construction of the above.

All bids that have been duly received will be publicly opened and read aloud by a designated representative, in the Council Room of the City of Sapulpa, Oklahoma, at the time and date shown above.

The information for Bidders, Bid Forms, Contract, Plans, Specifications, Bond Forms and other Contract Documents (and addenda, if any) may be examined at the following locations:

1. City of Sapulpa, Oklahoma, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066
2. Bid News/iSqFt
3. Southwest Construction News
4. ePlan

Plans and Specifications for this project may be obtained from Planning Design Group through a digital download file. Download will contain PDF files of the plans and specifications.

Pre-Bid Conference: A “**MANDATORY**” Pre-Bid Conference will be held, **April 24, 2025, at 10:00 A.M.**, at the Sapulpa City Hall, Council Chambers, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066 which is a prequalification.

The Owner reserves the right to waive any informality or to reject any or all bids.

The sealed proposal of each bidder shall be accompanied by a Noncollusion Affidavit, Business Relationship Affidavit, Experience and Equipment Questionnaire and a Certified or Cashier's Check or Bidder's Surety Bond in the sum of five percent (5%) of the amount of the bid will be required from each bidder to be retained as liquidated damages in the event the successful bidder fails, neglects, or refuses to enter into said contract for the construction of said public improvements for said project, and furnish the necessary bonds within ten (10) days from and after the date the award is made.

Bids received more than ninety-six hours, excluding Saturdays, Sundays and holidays, before the time set for opening of bids, as well as bids received after the time set for opening of bids, will not be considered and will be returned unopened.

No bidder may withdraw his bid within sixty (60) days after the actual date of the opening.

April 9, 2025
Date

Michael Russell
Michael Russell, Project Manager

INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids

The City of Sapulpa (herein called the "Owner"), invites bids on the form attached hereto. All blanks must be appropriately filled in. Bids will be received by the Owner at the office of the City Clerk until **2:00 P.M., May 6 2025**. The envelopes containing the bids must be sealed, addressed to the City of Sapulpa, 425 116 West Needles, Sapulpa, Oklahoma, and designated as Bid for the **Rock Creek Park Route 66 View Stop Project**. All bids that have been duly received will be publicly opened and read aloud by the City in the City Hall Council Room of the City of Sapulpa.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. The awarding of a contract to the lowest responsible bidder or bidders shall be made within sixty (60) days after the opening of bids unless the governing body of the awarding public agency, by formal recorded action and for good cause shown, provides for a reasonable extension of that period, which extension period shall not in any event exceed fifteen (15) days where only state or local funds are involved, or not to exceed ninety (90) days on any award of contract for the construction of a public improvement where funds are utilized which are furnished by an agency of the United States Government.

2. Pre-Bid Conference

A mandatory pre-bid conference for prospective bidders will be held on April 24, 2025, at 10:00 A.M., in the Council Room, City Hall, 425 East Dewey Avenue, Sapulpa, Oklahoma 74066. The purpose of this conference is to afford the prospective bidders the opportunity to ask questions relative to the project. The fact that a prospective bidder does not choose to attend will in no way affect his bid and the City of Sapulpa (Owner) will in no way be bound by any statement made at this conference.

3. Preparation of Bids

Each bid must be submitted in a sealed, opaque envelope bearing on the outside the name of the bidder, his/her address and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form.

The following documents shall be submitted in the bid package:

- a. Proposal (including acknowledging of any/all addenda)
- b. Bid Bond
- c. Noncollusion Affidavit 74 92 85.22 (Bid)
- d. Nondiscrimination Certificate
- e. Anti-kickback Affidavit
- f. Business Relationships Affidavit

4. Subcontracts

The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner.

5. Telegraphic Modification

Shall not be accepted.

6. Method of Bidding

The Owner invites the following bid:

Completed Proposal Form for the Rock Creek Park Route 66 View Stop Project for the City of

7. Qualifications of Bidders

Each Bidder shall be prepared, as requested by the Owner, to present evidence of experience, qualifications and financial ability to execute the terms of the Bid / Contract Documents. In determining the lowest, qualified, and best responsible Bid, the following elements shall be considered:

- A. Whether the Contractor(s) maintains a permanent place of business.
- B. Whether the Contractor(s) and/or their subcontractor(s) has adequate staffing, manpower and equipment to do the Work promptly and properly.
- C. Whether the Contractor(s) has suitable financial ability to meet the obligations incidental to the Work.
- D. Whether the Contractor(s) and/or their Subcontractor(s) has appropriate training and technical experience.
- E. Whether the Contractor(s) and/or their subcontractor(s) has a past record appropriate to the responsibilities and scope of the project.
- F. The Contractor(s) project references.
- G. The Contractor(s) bonding capacity and status.
- H. The Contractor(s) and/or their subcontractor(s) ability, capacity, and skill to perform the level of service required.
- I. Whether the Contractor(s) and/or their subcontractor(s) can perform the scope of work and/or provide the service promptly or within the time specified, without delay or interference, including but not limited to, past experience with the Owner or any duly constituted authority thereof.
- J. The character, integrity, reputation, judgment, experience and efficiency of the Contractor(s).
- K. The quality of performance of previous contracts or services.
- L. The previous and existing compliance by the Contractor(s) and/or their Subcontractor(s) with any laws and ordinances (Federal, State and/or local) relating to the scope of work or level of services required.
- M. The quality, suitability, availability, and adaptability of the goods, products, supplies, equipment, or contractual services to the particular use required.
- N. The operating cost, maintenance requirements, and performance data of major items of materials and equipment proposed by the Bidder.
- O. The ability of the Contractor(s) and/or their subcontractor(s) to provide future maintenance and service for the use of the subject of the Contract.
- P. The complexity, number, and scope of conditions of the Contract.
- Q. The bidders conformance to the Bid / Contract Documents.
- R. The Bidder's warranties, bonds, terms, and conditions.
- S. Whether the bid complies with the specifications, drawings, and other requirements herein.

8. Execution of the Contract

- A. The Owner reserves the right to accept any bid or portions thereof, or to reject any and all Bids or portions thereof, to waive any and all informalities not involving price, time or changes in the scope of work and to negotiate contract terms with the successful Bidder, and the right to disregard all nonconforming, non-responsive, unbalanced, or conditional Bids. The Owner also reserves the right to reject the Bid of any Bidder if the Owner believes that it would be in their best interest.
- B. Upon the request of the Owner, a Bidder(s) whose Bid is under consideration for award of Contract shall submit promptly to the Owner, satisfactory evidence indicating the Bidder's financial resources, construction experience and organization available for the performance of the Contract and the name of any alternate subcontractor(s) proposed for Owner approval.
- C. Notwithstanding any delay in the preparation and execution of the formal Contract(s), each Bidder shall be prepared, upon written Notice of Award, to commence Work following the Owner's issuance of the Notice to Proceed.

9. Bid Security

Each bid must be accompanied by cash, certified check of the Bidder or a bid bond duly executed by the Bidder as principal and having as surety thereon a surety company approved by the Owner, in the

amount of five percent (5%) of the bid. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three (3) days after the opening of bids and the remaining cash, checks, or bid bonds will be returned promptly after the Owner and the accepted Bidder have executed the contract. The awarding of a contract to the lowest responsible bidder or bidders shall be made within sixty (60) days after the opening of bids unless the governing body of the awarding public agency, by formal recorded action and for good cause shown, provides for a reasonable extension of that period, which extension period shall not in any event exceed fifteen (15) days where only state or local funds are involved, or not to exceed ninety (90) days on any award of contract for the construction of a public improvement where funds are utilized which are furnished by an agency of the United States Government.

10. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

11. Time of Completion and Liquidated Damages

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within **210** consecutive calendar days thereafter. Bidder must also agree to pay liquidated damages for each consecutive calendar day thereafter as hereinafter provided in General Condition 206.07.

12. Conditions of Work

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the contractor, in carrying out his work, must employ all methods or means as will not cause any interruptions of or interference with the work of any other contract.

13. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

- A. Should a Bidder find discrepancies in or omissions from the Bid Documents, or be in doubt as to their meaning or intent, he must notify and request a clarification from the Owner in writing. All interpretations and clarifications considered necessary by the Owner shall be issued to all Bidders of record as Addenda to the Bid Documents and shall become part of the Contract. Questions received from the Bidders less than Three (3) days prior to the date of opening bids shall not be answered. The Owner shall not be responsible for oral clarification. All Addenda items issued during the time of bidding shall be covered in the Bid and acknowledged on the proposal.
- B. If any person contemplating submitting a Bid for the proposed Contract is in doubt as to the meaning of any part of the Contract Documents shall submit questions, in writing, to the Owner for clarification or interpretation. The Owner shall log this request, obtain the appropriate answer, and if necessary issue a response in the form of an Addendum to all bidders of record. The Bidder shall submit all requests to the following person:

Mr. Geoff Evans
Planning Design Group
5314 South Yale Ave., Suite 510
Tulsa, Oklahoma 74135
Phone: (918) 628-1255
Email: gevans@pdgtulsa.com

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be emailed with return receipt requested to all prospective bidders (at the respective email addresses furnished for such purposes). Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under this bid as submitted. All addenda so issued shall become part of the contract documents and shall be acknowledged on the proposal form.

14. Security for Faithful Performance

Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

15. Power of Attorney

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of this power of attorney.

16. Notice of Special Conditions

Attention is particularly called to those parts of the contract documents and specifications that deal with the following:

- a. Inspection and testing of materials
- b. Insurance requirements

17. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

18. Obligation of Bidder

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or documents shall in no way relieve any bidder from any obligation in respect to his bid.

19. Disqualification of Bidders

No contract will be awarded to any persons, firm, partnership, company, or corporation in arrears to the City of Sapulpa upon a debt or contract, or in default as surety or otherwise upon any obligation to the City of Sapulpa.

20. Exemption from State and Local Sales Tax

Omit sales tax on this project in compliance with provisions set forth in Sections 1356(A), 1356(B) and 1356(I) of Title 68 of the Oklahoma Statutes. Both the named Contractor and subcontractors, in accordance with such Statutes and consistent with the Oklahoma Tax Commission Decision No. M8700147 in the execution of a public contract will be exempt after having been duly appointed as purchasing agents by the public entity. The Owner will appoint the Contractor and subcontractor as agents for the City of Sapulpa for this project on a state and local sales tax exempt basis in accordance with the foregoing authorities. A copy of the Appointment of Agent form is included in the Contract Documents.

21. Noncollusion Affidavits:

- A. The Bidder shall be required to execute and submit as a part of his bid the Owner's Noncollusion Affidavit. Refer to the enclosed form 74 OS 85.22 (Bid)
- B. The Contractor (successful bidder) shall be required to execute and submit as a part of executing the Contract, the Owner's Noncollusion Affidavit. Refer to the enclosed form 74 OS 85-23 (Contract).

22. Nondiscrimination Certificate

The bidder shall be required to execute and submit as a part of their bid the Owner's Nondiscrimination Certificate. Refer to the enclosed form.

23. Anti-Kickback Affidavit

The bidder shall be required to execute and submit as a part of their bid the Owner's Anti-Kickback Affidavit. Refer to the enclosed form.

24. Proposal

Before submitting the Proposal, carefully examine all Bid Documents, visit the site, examine existing conditions and limitations, and include a sum to cover the cost of all items included in the Bid Documents. Failure or omission of the Bidder to receive or examine any form, instrument, Addendum or other documents, or visit the site and acquaint himself with existing conditions shall not relieve the Bidder from obligations with respect to his Bid or to Contract requirements. Submission of the Proposal shall be taken as prima facie evidence of the Contractor's acceptance of and intent to comply with the Bid Documents.

- A. Proposals shall be made only on the form provided in these specifications. All blank spaces on the form shall be completed (fully filled out), bids stated both in writing (words) and numerically, signatures signed in longhand, and form completed without interlineations, alteration or erasure. Oral, telegraphic or telephonic proposal or modifications shall not be accepted.
- B. Proposals may contain pre-approved alternate proposals in accordance with the conditions outlined in these Specifications.
- C. Proposals shall be delivered to the place designated, on or before the day and hour set for the opening of Bids. It is the sole responsibility of the Bidder to deliver the Proposal before the scheduled closing time. Bids received after the scheduled closing time shall be returned unopened.
- D. In the event of a discrepancy between prices quoted in writing (words) and those quoted numerically, writing shall govern. Unit Prices shall govern over totals. All prices shall include the furnishing of materials equipment, tools and all other facilities and performance of labor and services necessary for proper completion of the Work specified herein.
- E. Proposals shall not contain any recapitulation of the Work to be done.
- F. The Bid shall contain an acknowledgment of receipt of all Addenda issued by the Owner. The Bidder must fill in the number and date of each addendum.
- G. Failure of the Bidder to properly fill out the Form of Proposal, provide proper bonding, or provide all necessary documents and affidavits as required by these Contract Documents, shall be grounds for rejection of the Bid by the Owner.

25. Bonds

- A. The Contractor(s) shall furnish and pay for a Performance Bond, Statutory Bond and Maintenance Bond in accordance with these documents. Furnish bonds in such form as the Owner may prescribe and with a surety company licensed to conduct business in the State of Oklahoma and acceptable to the Owner. The Bidder shall deliver said bonds to the Owner, no later than fifteen (15) business days after the date of the Notice to Award. Failure or neglecting

to deliver said bonds, as specified, shall be considered as having abandoned the Contract and the bid security shall be retained as liquidated damages.

- B. In lieu of the required Bonds, the Contractor(s) may provide an irrevocable letter of credit complying with the provisions of Sections 1 and 2, Title 61 of the Oklahoma Statutes: and containing such terms as may be prescribed by the Department of Central Services issued by a solvent financial institution insured by the Federal Deposit Insurance Corporation for the Benefit of the State of Oklahoma, on behalf of the awarding public agency, in a sum equal to the bond price, to ensure the proper and prompt completion of the Work in accordance with the provisions of the contract and bidding documents and to protect the awarding public agency against defective workmanship and materials for a period of two (2) years after final acceptance of the Project by the Owner.

26. Subcontractors, Suppliers, and Others

- A. If the Owner, after due investigation, has a reasonable objection to any proposed subcontractor or supplier, other person or organization, the Owner will request the apparent successful bidder to submit an acceptable substitute without an increase in the Bid Price. Prior to the Notice of Award, if the apparent successful bidder declines to provide the acceptable substitute for the project, the Owner may, at their option, award the contract to the next qualified bidder. If the Owner awards the contract to another bidder, the bid security will be returned to the original apparent successful bidder.
- B. No Contractor shall be required to employ a subcontractor, supplier, or other person and/or organization against whom the Contractor has reasonable objection.

27. Surface and Subsurface Conditions

The bidder shall exercise due diligence in making determinations which would concern any complications or difficulties due to surface or sub-surface conditions. Accordingly, based upon Contractor's due diligence, the City of Sapulpa is indemnified from any additional work, additional costs whatsoever incurred arising out of sub-surface water, clay conditions, soil conditions, or other difficulties or hardships which might arise as a result of surface or sub-surface conditions of a geographical or hydrological nature.

28. METHOD OF PAYMENT

- A. The Contractor(s) shall be paid for installed materials (Work completed in place), which have been approved by the Owner, based upon the prices identified on the Proposal.
- B. The Contractor(s) shall submit monthly invoices for consideration by the Owner. The invoices shall be submitted on a form approved by the Owner. The invoices will clearly itemize the amount of each material installed, the prices, the total for each item, and the total amount.
- C. The Owner will withhold five (5%) percent retainage from each invoice until completion of the project and final written approval by the Owner (acceptance of the installed Work).

29. Affidavit of Claimant

With each pay estimate the Contractor shall execute a copy of the Affidavit of Claimant included in the Contract Documents.

PROPOSAL

ROCK CREEK PARK ROUTE 66 VIEW STOP PROJECT CITY OF SAPULPA, OKLAHOMA

Date _____

Proposal of _____

(hereinafter called "Bidder"), organized and existing under the laws of the State of _____,

doing business as _____.*

To the **City of Sapulpa, Oklahoma** (hereinafter called "Owner").

Gentlemen:

The Bidder, in compliance with your invitation for bids for the **Route 66 Park Project** having examined the Plans and Specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the unit prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this Proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within **210** consecutive calendar days thereafter as stipulated in the specifications. **Bidder further agrees to pay as liquidated damages in accordance with section 208.07.**

Each unit Price space provided herein shall be filled out by the bidder and shall become a part of the Base Proposal. Prices quoted herein shall include all amounts that would be payable to the Contractor in case of additions to the Contract, or would be deducted from the Contract sum by the Owner in case of reductions. Unit Prices shall include all expenses incurred in performing all of the work required under the Contract Documents as applicable to the unit item, including taxes payable, labor, material, equipment, supplies, supervision, overhead and profit. It is expressly stated that the Contract Sum is derived from the entire work as called for in the Contract Documents and while these Unit Prices may or may not have been used in the computing the Contract Sum, their inclusion here is for the purpose herein described, and the Owner reserves the right to deduct from the Base Proposal or add to the Base Proposal any of the items prices or portions thereof at the price quoted herein either before or after Contract awarding.

This proposal is based on the Contract Documents, Technical Specifications and Drawings as listed in the Table of Contents and any addendum issued.

Bidder acknowledges receipt of the following addendum:

NUMBER:	DATE:	NUMBER:	DATE:
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

* Insert "a corporation", "a partnership" or an "individual", as applicable.

Bidder agrees to perform all the construction described in the specifications and shown on the Plans for the following unit prices: (NOTE: Bids shall include applicable taxes and fees.)

Unit prices in Base Bid and Add Alternates must contain the same Unit Price when Bid Items Identical. If Unit Prices vary from Base Bid and Alternate Bid Items, the lower of the Unit Prices will be used for all Identical Bid Items.

ROUTE 66 PARK - BID SCHEDULE

BASE BID PAY ITEMS

Item	Description	Unit	Quantity	Amount
1	General Conditions/Bonds/Insurance @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
2	Erosion Control - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
3	Demolition - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
4	Clearing and Grubbing - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
5	Grading @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
6	Bridge - Steel Repairs @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
7	Bridge - Steel for Guardrail @ _____ Dollars	LBS (\$ _____)	7,750 =	\$ _____
8	Bridge - Removal of Guardrail @ _____ Dollars	LF (\$ _____)	100 =	\$ _____
9	Bridge - Expansion Joint @ _____ Dollars	LF (\$ _____)	22 =	\$ _____
10	Bridge - Asphalt Removal @ _____ Dollars	SF (\$ _____)	900 =	\$ _____
11	Bridge - Brick Replacement @ _____ Dollars	SF (\$ _____)	900 =	\$ _____
12	Bridge - Joint Resanding @ _____ Dollars	SF (\$ _____)	8,000 =	\$ _____
13	Bridge - Vegetation Removal @ _____ Dollars	SF (\$ _____)	8,500 =	\$ _____
14	Bridge - Perimeter Concrete Band Repair @ _____ Dollars	LF (\$ _____)	45 =	\$ _____
15	Bridge - Concrete Deck Repair @ _____ Dollars	SF (\$ _____)	500 =	\$ _____
16	Existing Road Clean Up @ _____ Dollars	SF (\$ _____)	6,900 =	\$ _____
17	Existing Road Clean Up - Concrete Patching @ _____ Dollars	SF (\$ _____)	100 =	\$ _____
18	Existing Road Clean Up - Crack Sealing @ _____ Dollars	LF (\$ _____)	500 =	\$ _____
19	Concrete Paving - Parking Lot - 5" Thick - CIP @ _____ Dollars	SY (\$ _____)	551 =	\$ _____
20	Concrete Paving - Entry Drive - 5" Thick - CIP @ _____ Dollars	SY (\$ _____)	491 =	\$ _____
21	Concrete Paving - Bus Parking Lot - 6" Thick - CIP @ _____ Dollars	SY (\$ _____)	269 =	\$ _____
22	Curb and Gutter - 1'-8" - CIP @ _____ Dollars	LF (\$ _____)	330 =	\$ _____
23	Wheelstop - CIP @ _____ Dollars	EA (\$ _____)	12 =	\$ _____
24	Striping - Parking Lots, Crosswalks, and Symbols - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____

Item	Description	Unit	Quantity	Amount
25	Handicap Parking Signs - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
26	Hackett Stone Walls - Main Parking Lot, Plaza and Playground/Turf Areas, and Bus Parking Area - CIP @ _____ Dollars	TONS (\$ _____)	210 =	\$ _____
27	Playground Area Seat Walls - CIP @ _____ Dollars	TONS (\$ _____)	15 =	\$ _____
28	Freestanding Entry Sign Wall - CIP @ _____ Dollars	TONS (\$ _____)	20 =	\$ _____
29	Brick Seat Walls - CIP @ _____ Dollars	LF (\$ _____)	361 =	\$ _____
30	Decomposed Granite Plazas - CIP @ _____ Dollars	SF (\$ _____)	1455 =	\$ _____
31	Brick Paver Plazas - CIP @ _____ Dollars	SF (\$ _____)	957 =	\$ _____
32	Plain Concrete Sidewalk - 4" Thick CIP @ _____ Dollars	SF (\$ _____)	2850 =	\$ _____
33	Stairs - CIP @ _____ Dollars	SF (\$ _____)	230 =	\$ _____
34	Stair Railings @ _____ Dollars	LF (\$ _____)	35 =	\$ _____
35	Special Paving at Plaza - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
36	Decorative Concrete Paving (Sandscape) - Sidewalk and Outer Plaza Ring - CIP @ _____ Dollars	SF (\$ _____)	1,200 =	\$ _____
37	Stone Insets at Plaza Entry Sidewalk/Decorative Paving - CIP @ _____ Dollars	SF (\$ _____)	91 =	\$ _____
38	Shade Sail Structure at Plaza - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
39	Corten Steel Sign Plate and Lettering @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
40	Boulder Playground Equipment - CIP @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
41	Synthetic Lawn - Playground Area - CIP @ _____ Dollars	SF (\$ _____)	787 =	\$ _____
42	Synthetic Lawn - CIP @ _____ Dollars	SF (\$ _____)	750 =	\$ _____
43	License Plate Pole - Installation Only @ _____ Dollars	EA (\$ _____)	7 =	\$ _____
44	Directional Pole - Installation Only @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
45	Get Your Kicks Sign - CIP @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
46	Neon Sign - CIP @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
47	Bridge Weight Limit Sign - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
48	Pedestrian Bridge - Installation Only @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
49	Pedestrian Bridge Abutments - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____

Item	Description	Unit	Quantity	Amount
50	Kiosks - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
51	Picnic Table (Lawn Area) - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
52	Table and Chairs (Plaza Area) - CIP @ _____ Dollars	EA (\$ _____)	2 =	\$ _____
53	Trash Receptacle - CIP @ _____ Dollars	EA (\$ _____)	3 =	\$ _____
54	Dog Waste Station - CIP @ _____ Dollars	EA (\$ _____)	1 =	\$ _____
55	Bollards - CIP @ _____ Dollars	EA (\$ _____)	11 =	\$ _____
56	Lighting and Electrical - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
57	Boulder Stream - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
58	12" Dia. PVC Pipe (Below Playground) - CIP @ _____ Dollars	LF (\$ _____)	30 =	\$ _____
59	Landscaping - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
60	Wildflower Mix - CIP @ _____ Dollars	SF (\$ _____)	10,000 =	\$ _____
61	Bermuda Sod - CIP @ _____ Dollars	SF (\$ _____)	14,000 =	\$ _____
62	Bufflao Grass Sod - CIP @ _____ Dollars	SF (\$ _____)	1,500 =	\$ _____
63	Topsoil (to be used as a contingency) @ _____ Dollars	CY (\$ _____)	200 =	\$ _____
64	Irrigation - CIP @ _____ Dollars	LSUM (\$ _____)	1 =	\$ _____
65	Construction Allowance @ _____ Dollars	ALLOW (\$ <u>50,000.00</u>)	1 =	\$ <u>50,000.00</u>

TOTAL BASE BID ITEMS _____ **Dollars (\$ _____)**

ALTERNATE PAY ITEMS

Item	Description	Unit	Quantity	Amount
A-1	String Light Poles - CIP @ _____ Dollars	EA (\$ _____)	5 =	\$ _____
A-2	String Lights - CIP @ _____ Dollars	LF (\$ _____)	100 =	\$ _____

TOTAL ALTERNATE BID ITEMS _____ **Dollars (\$ _____)**

TOTAL BASE & ALTERNATE BID _____ **Dollars (\$ _____)**

CIP = COMPLETE IN PLACE

Lowest and best bidder will be determined by the sum of the Base Bid and all, some, or none of the Add Alternates. The City reserves the right to award all, some, or none of the Add Alternates.

The Owner reserves the right to waive any informality or to reject any or all bids.

Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words for unit prices will govern.

The above unit prices shall include all labor, materials, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids in accordance with their best interests.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this Bid, Bidder will execute the formal contract attached within ten (10) days and deliver a Surety Bond or Bonds as required by the General Conditions. The bid security attached in the sum of _____ Dollars (\$ _____) is to become the property of the Owner in the event the contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted,

By: _____

Type or Print Name

Title: _____

Business Address

(S E A L - if bid is by a corporation)

**NONCOLLUSION AFFIDAVIT
74 92 85.22 (BID)**

STATE OF OKLAHOMA)
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says:

1. He/she is the duly authorized agent of _____, the BIDDER submitting the competitive Bid which is attached to this statement for the purpose of certifying the facts pertaining to the existence of collusion among bidders and between bidders and City officials or employees, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the letting of any contract pursuant to the bid to which this statement is attached.
2. He/she is fully aware of the facts and circumstances surrounding the making of the bid to which this statement is attached and has been personally and directly involved in the proceedings leading to the submission of such bid; and
3. Neither the bidder nor anyone subject to the bidder's direction or control has been a party:
 - a. To any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding,
 - b. To any collusion with any City official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract, nor
 - c. In any discussions between bidders and any City official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

Authorized Agent

SUBSCRIBED AND SWORN to before me this _____ day of _____, 202__.

Notary Public

My Commission Expires: _____

NONDISCRIMINATION CERTIFICATE

STATE OF OKLAHOMA)
COUNTY OF _____)

I, _____ do here by certify that I am
the _____ of the _____, a
corporation, partnership, or sole proprietorship.

I further certify that I have this date, submitted a bid to the **City of Sapulpa, Oklahoma**
pursuant to the solicitation for bids dated _____, 202____.

I certify that if I am the successful Bidder on the Project, I will not discriminate against anyone in
the employment or employment practices because of race, creed, color, sex, national, origin,
religion, handicap or age. I will comply with all federal and state laws and executive orders
concerning the subject of nondiscrimination.

By: _____

Title

SUBSCRIBED AND SWORN to before me this ____ day of _____, 202____.

Notary Public

My Commission Expires: _____

ANTI-KICKBACK AFFIDAVIT

STATE OF OKLAHOMA
COUNTY OF _____

_____, of lawful age, being first duly sworn, on oath says:

1. He/she is the duly authorized agent of _____, the CONTRACTOR under the contract which is attached to this statement for the purpose of certifying the facts pertaining to the offering or giving of money or other things of value directly or indirectly to government personnel in order to procure said contract..
2. He/she is fully aware of the facts and circumstances surrounding the making of the contract to which this statement is attached and has been personally and directly involved in the proceedings leading to the procurement of said contract; and
3. Neither the Contractor nor anyone subject to the Contractor's direction or control has paid, given or donated or agreed to pay, give or donate to any officer or employee of The City of Sapulpa or the Sapulpa Public Works Authority, any money or other things of value, either directly or indirectly, in procuring the contract to which this statement is attached.

Authorized Agent

SUBSCRIBED AND SWORN to before me this _____ day of _____, 202____.

Notary Public

My Commission Expires: _____

BUSINESS RELATIONSHIPS AFFIDAVIT

STATE OF _____ }
COUNTY OF _____ } SS

_____, of lawful age, being first duly sworn, on oath, says that (he/she) is the agent authorized by the Bidder to submit the attached Bid.

Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect, or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect, or which existed within one (1) year prior to the date of this 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:

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

(If none of the business relationships hereinabove mentioned exist, Affiant should so state.)

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 202_____.

My Commission Expires:

Notary Public

CONTRACT

Rock Creek Park Route 66 View Stop Project

THIS CONTRACT AND AGREEMENT, made and entered into this _____ day of _____, 202____, by and between **The City of Sapulpa, Oklahoma,** Party of the First Part, hereinafter termed "Owner" and _____ Party of the Second Part, hereinafter termed "Contractor".

WITNESSETH:

WHEREAS, The City of Sapulpa, Oklahoma (Owner) has caused to be prepared in accordance with law, certain Plans, Specifications, and other Bidding Documents for The Work hereinafter described and has approved and adopted all of said Bidding Documents, and has caused Solicitation for Bids to be given and advertised as required by law, and has received sealed Proposals for the furnishing of all labor and materials for _____ as outlined and set out in the Bidding Documents and in accordance with the terms and provisions of said Contract; and,

WHEREAS, Contractor, in response to said Solicitation for Bids, has submitted to Owner in the manner and at the time specified, a sealed Proposal in accordance with the terms of this Contract; and,

WHEREAS, the Owner, in the manner provided by law, has publicly opened, examined, and canvassed the Proposals submitted and has determined and declared the above-named Contractor to be the lowest responsible Bidder on the above-described project, and has duly Awarded this Contract to said Contractor, for the sum name in the Proposal, to-wit: _____ Dollars (\$_____):

NOW, THEREFORE, for and in consideration of the mutual agreements and covenants herein contained, the parties to this Contract have agreed, and hereby agree, as follows:

1. The Contractor shall, in a good and first-class, workmanlike manner, at his own cost and expense, furnish all labor, materials, tools, and equipment required to perform and complete said Work in strict accordance with this Contract and the following Contract Documents:

_____ all of which documents are on file in the office of the Owner: **The City of Sapulpa, Oklahoma at 425 East Dewey Avenue, Sapulpa, Oklahoma 74066,** and are made a part of this Contract as fully as if the same were herein set out at length, with the following additions and exceptions: (If none, so state) _____

2. The Owner shall make payments to the Contractor in the following manner: On or before the last working day of each month, the agency engineer, or other appropriate person, will make accurate estimates of the value, based on contract prices, of work done and materials incorporated in The Work and of materials suitably stored at the site thereof during the preceding calendar month. The Contractor shall furnish to the agency engineer, or other appropriate person, such detailed information as he may request to aid him as a guide in the preparation of the monthly estimates.

Each monthly estimate for payment must contain or have attached an affidavit as required by Senate Bills 469 and 565 of the 1974 Legislature.

- 2-a. Contractor expects to store during the construction period certain materials and equipment on site. Contractor assumes full responsibility for any theft, loss or damage to materials stored on site. The City of Sapulpa assumes no responsibility for any loss, damage or theft of any equipment, tools or supplies occurring during period of construction.

3. On completion of The Work, but prior to the acceptance thereof by the Owner, it shall be the duty of the agency engineer, or other appropriate person, to determine that said Work has been completely and fully performed in accordance with said Contract Documents; and upon making such determination said official shall make his final certificate to the Owner. The Contractor shall furnish proof that all claims and obligations incurred by him in connection with the performance of said Work have been fully paid and settled; said information shall be in the form of an affidavit, which shall bear the approval of the Surety on the Contract Bonds for payment of the final estimate to the Contractor; thereupon, the final estimate (including retainages) will be approved and paid.
4. The sworn, notarized statement below must be signed and notarized before this Contract will become effective.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed, in four (4) duplicate originals, the day and year first above written.

PARTY OF THE SECOND PART:

CONTRACTOR: _____

By _____
Title: _____

ATTEST:

Title: _____

(SEAL)

PARTY OF THE FIRST PART:

OWNER: **City of Sapulpa, Oklahoma**

By _____
Mayor

ATTEST:

City Clerk

(SEAL)

STATE OF _____ }
COUNTY OF _____ } SS

_____, of lawful age, being first duly sworn, on oath says that (he/she) is the agent authorized by Contractor to submit the above Contract to the Owner.

Affiant further states that Contractor has not paid, given, or donated or agreed to pay, give, or donate to any officer or employee of Owner any money or other thing of value, either directly or indirectly, in the procuring of the Contract.

Title: _____

SUBSCRIBED AND SWORN TO BEFORE ME, this ____ day of _____, 202__.

Notary Public

My Commission Expires:

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as Principal, and _____, a corporation organized under the laws of the State of _____ Oklahoma and authorized to transact business in the State of Oklahoma, as Surety, are held and firmly bound unto **The City of Sapulpa, Oklahoma** (Owner) in the penal sum of _____ Dollars (\$ _____) in 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.

Dated this _____ day of _____, 202__.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a written Contract with **The City of Sapulpa, Oklahoma** (Owner), dated this _____ day of _____, 202__, for the **Rock Creek Park Route 66 View Stop Project** in compliance with the Plans and Specifications therefore, made a part of said Contract and on file in the office of **The City of Sapulpa, Oklahoma** (Owner) at 425 East Dewey Avenue, Sapulpa, Oklahoma 74066.

NOW, THEREFORE, if said Principal shall, in all particulars 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 subcontract or otherwise; and if said Principal shall protect and save harmless said **The City of Sapulpa, Oklahoma** (Owner) 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 construction of said Work, or by or in consequence of any negligence, carelessness or 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 City of Sapulpa, Oklahoma** (Owner) harmless from all suits and claims of infringement or alleged infringement or patent rights or processes, 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 of 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 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.

PRINCIPAL:

ATTEST:

By _____

SURETY:

By _____
Attorney-in-Fact

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as principal, and _____ a Corporation organized under the laws of the State of Oklahoma, and authorized to transact business in the State of Oklahoma as Surety, are held and firmly bound unto the **State of Oklahoma**, in the penal sum of _____ Dollars (\$_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and delivered this _____ day of _____, 202__.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT WHEREAS, the said

has on this _____ day of _____, 202__, entered into a written contract with **The City of Sapulpa, Oklahoma** for the **Rock Creek Park Route 66 View Stop Project** according to the plans and specifications attached to said contract, which include the furnishing of all necessary labor, tools, equipment and materials, in accordance with the plans and specifications contained in said contract and made a part thereof, which contract, plans and specifications are by reference thereto made a part of this Bond.

NOW, THEREFORE, if said _____ shall pay all indebtedness incurred for labor, tools, equipment or materials furnished or consumed in connection with the construction of the said contract work, then this obligation shall become null and void; otherwise, to be in full force and effect.

PRINCIPAL

By: _____
Signature & Title

ATTEST:

SURETY:

By: _____
Attorney-in-Fact

MAINTENANCE 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, are held and firmly bound unto
The City of Sapulpa, Oklahoma (Owner) in the penal sum of _____ Dollars
(\$ _____) in 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.

Dated this _____ day of _____, 202__.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a written Contract with **The City of Sapulpa, Oklahoma**
(Owner) dated _____ 202__, for the **Rock Creek Park Route 66 View Stop Project** all in
compliance with the plans and specifications therefore, made a part of said Contract, and on file in the office
of **The City of Sapulpa, Oklahoma** (Owner) at **425 East Dewey Avenue, Sapulpa, Oklahoma 74066**.

NOW, THEREFORE, if said Principal shall pay or cause to be paid **The City of Sapulpa, Oklahoma** (Owner) 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 two (2) years for all projects, from and after acceptance of said project by **The City of Sapulpa, Oklahoma** (Owner); and if Principal shall pay or cause to be paid all labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold **The City of Sapulpa, Oklahoma** (Owner) 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.

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 of 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 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.

PRINCIPAL:

By: _____
Signature & Title

ATTEST:

SURETY:

By _____
Attorney-in-Fact

**NONCOLLUSION AFFIDAVIT
74 92 85.22 (CONTRACT)**

STATE OF OKLAHOMA)
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says:

1. He/she is the duly authorized agent of _____, the CONTRACTOR under the contract which is attached to this statement for the purpose of certifying the facts pertaining to the giving or offering or giving of things of value to government personnel in order to procure said contract; and,.
2. He/she is fully aware of the facts and circumstances surrounding the making of the contract to which this statement is attached and has been personally and directly involved in the proceedings leading to the procurement of said contract; and
3. Neither the Contractor nor anyone subject to the Contractor's direction or control has paid, given or donated or agreed to pay, give or donate to any officer or employee of The City of Sapulpa, any money or other things of value, either directly or indirectly, in procuring the contract to which this statement is attached.

Authorized Agent

SUBSCRIBED AND SWORN to before me this _____ day of _____, 202__.

Notary Public

My Commission Expires: _____

CLAIM or INVOICE AFFIDAVIT

STATE OF OKLAHOMA)

) SS

COUNTY OF _____)

The undersigned Contractor, of lawful age, being first duly sworn, on oath says that his invoice or claim is true and correct. Affiant further states that the work and materials as shown by this claim have been completed in accordance with the Plans, Specifications, orders or requests furnished the affiant. Affiant further states that (s)he has made no payment, given or donated or agreed to pay, give or donate, either directly or indirectly, to any elected official, officer or employee of the State, County, City or Authority of money or any other thing of value to obtain payment or the Award of this Contract.

Contractor

Subscribed and sworn to before me this _____ day of _____, 202____.

Notary Public

My Commission Expires:

APPOINTMENT OF AGENT

The City of Sapulpa, Oklahoma hereafter referred to as the "City" does hereby appoint _____, (an individual, partnership, or corporation) doing business in Oklahoma acting through its officers and employees, hereafter referred to as "Agent" of the City for the sole purpose of completing **Rock Creek Park Route 66 View Stop Project** under a contract dated the _____ day of _____, 202__, being constructed in Sapulpa, Oklahoma, hereafter referred to as the "Project" for the use of the City. Agent agrees to act as Agent for the City subject to the provisions of this Appointment.

Legal title to all tangible personal property purchased, and the right to direct the use of all tangible personal property rented, by the Agent pursuant to this Appointment shall pass directly from the vendor to the City. Agent shall designate on its purchase orders and elsewhere as appropriate when it is making purchases pursuant to this appointment, following legend:

_____ has been appointed Agent for the City of Sapulpa, Oklahoma for the purpose of the property described herein. Upon passage of title all of such property will be included in the project owned by the City. Title to all such property shall pass to said City from the vendor F.O.B. place specified in this purchase order. All such property is exempt from Oklahoma sales and use taxes and /or City sales tax."

Rental agreements relating to such property shall contain suitable provisions which disclose the Agent's agency and indicate that no Oklahoma sales or use tax or City sales tax is payable.

Agent agrees no to purchase or rent any tangible personal property pursuant to this Appointment unless such property is authorized for inclusion in or exclusive use in the construction of the Project described above. Agent shall not have the power to appoint any other person or entity as Agent for the City.

Agent shall be responsible in a separate capacity for payment of the purchase price or other consideration for the property purchased or rented as Agent and shall not have the power to bind the City to any financial or other commitments or obligations. Agent shall hold the City harmless from any liability for or arising out of the purchase, rental or use of the property purchased or rented hereunder.

This Appointment shall be effective upon execution by the City acting through the City Manager and by the Agent and shall be binding upon the successors of the parties hereto.

Executed by the undersigned Manager of the City of Sapulpa, State of Oklahoma, on behalf of the City of Sapulpa, on this _____ day of _____, 202__.

CITY OF SAPULPA, OKLAHOMA

BY: _____
City Manager

Tax Exemption Number

ATTEST: _____
City Clerk

AGENT'S MAILING ADDRESS: Company Name: _____

Address: _____.

City, State, Zip: _____

SPECIAL PROVISIONS

101 EXISTING UTILITIES

Contractor shall be responsible for locating existing utilities in the area of construction prior to any work being done. All conflicts should be reported to the Engineer. Any work done in the area of a conflict without the Engineer's knowledge shall be at the Contractor's own risk.

102 SALVAGEABLE MATERIALS

All materials which are salvageable, as determined by the Engineer and/or Owner, shall remain the property of the Owner. Those materials deemed to be unsalvageable shall be properly disposed of by the contractor.

103 TESTING

The Owner will have performed and pay for the costs of all tests required by the Engineer such as densities and concrete strength. Contractor shall assist as required, in the performance of these tests.

Re-testing required by the failure of original tests not meeting the specifications will be required by the Owner to be paid for by the contractor.

104 CONSTRUCTION LINES AND GRADES

The new fence shall be located on the same alignment as the existing fence where an existing fence exists. If an existing fence does not exist the new fence shall be located at a location established by the Owner.

It shall be the responsibility of the Contractor to set, protect and maintain basic control points to define the existing fence location until the new fence is installed.

105 UNDERGROUND INSTALLATIONS AND STRUCTURES

Pipelines and other existing underground installations and structures in the vicinity of the work to be done hereunder are indicated on the drawings according to information available to the Engineer; however, all lines actually existing may not be shown. The Contractor shall make every effort to locate all underground pipelines, conduits, and structures by contacting owners of underground utilities and by prospecting in advance of trench excavation.

106 UNFORESEEN CONDITIONS

The bidder shall exercise due diligence in making determinations which would concern any complications or difficulties due to surface or sub-surface conditions. Accordingly, based upon Contractor's due diligence, the City of Sapulpa is indemnified from any additional work, additional costs whatsoever incurred arising out of sub-surface water, clay conditions, soil conditions, or other difficulties or hardships which might arise as a result of surface or sub-surface conditions of a geographical or hydrological nature.

107 WORKING DAYS

The calendar days in this contract have been established based on the average number of working days each month per ODOT standards.

108 PAY ITEMS

Any work shown on the plans or required for a complete project and not covered by a bid item shall be considered incidental to the project and included in the price for listed bid items.

GENERAL CONDITIONS

SECTION 201 - DEFINITION OF TERMS

201.1 DEFINITIONS:

Wherever the words, forms or phrases herein defined, or pronouns used in their stead, occur in these Specifications in the Contract, or in the Advertisement, or any Document, or instrument herein contemplated, or to which these Specifications apply, the intent and meaning shall be interpreted as follows:

AASHTO - The American Association of State Highway and Transportation Officials.

Act of God - An earthquake, flood, cyclone or other cataclysmic phenomenon of nature. Rain, wind, flood or other natural phenomenon of normal intensity for the locality shall not be construed as an Act of God.

Advertisement - All of the legal publications pertaining to The Work contemplated or under Contract.

AGA - The American Gas Association

ANSI - The American National Standards Institute (formerly the American Standards Association).

Architect, Landscape Architect or Engineer – Architect, Landscape Architect or Engineering Company or their duly authorized agents.

ASA - The American Standards Association. (Now designated as the American National Standards Institute.) ASA and ANSI, where used in these Specifications, shall denote the American National Standards Institute.

ASTM - The American Society for Testing Materials.

Award - The decision of the Owner to accept the Proposal of the lowest and best Bidder for The Work, subject to the execution and approval of a satisfactory Contract and the required Bonds therefore, and to such other conditions as may be specified or otherwise required by law.

AWWA - The American Water Works Association.

Beneficial Occupancy - A period in time determined by the Engineer when the Owner permanently occupies The Work or a portion thereof. The Contractor will be required to furnish a release from his Surety and from his insurance carrier prior to the establishment of beneficial occupancy.

Bidder - Any person or persons, partnership, company, firm or corporation acting directly or through a duly authorized representative submitting a Proposal for The Work contemplated.

Change of Address - It shall be the duty of each party to advise the other parties to the Contract as to any change in his business address until completion of the Contract.

Contract - The Agreement covering the performance of The Work described in the Contract Documents including all supplemental agreements thereto and all General and Special Conditions pertaining to The Work or materials thereof.

Contract Documents - The Contract Documents comprise the following documents, including all additions, deletions and modifications incorporated therein:

- A. Legal and Procedural Documents
 - 1. Advertisement
 - 2. Instructions to Bidders
 - 3. Proposal
 - 4. Proposal Guaranty
 - 5. Contract
 - 6. Performance Bond
 - 7. Statutory Bond
 - 8. Maintenance Bond
 - 9. Experience and Equipment Questionnaire (if required)
 - 10. Special Equipment Questionnaire (if required)
 - 11. Addenda
 - 12. Change Orders
- B. Special Conditions of the Contract
- C. General Conditions of the Contract
- D. Detailed Specification Requirements
- E. Drawings - Bound separately or with the Specifications

Contractor - The person or persons, partnership, company, firm or corporation entering into Contract for the execution of The Work, acting directly or through a duly authorized representative.

Drawings - Those listed in the Index to Specifications and Drawings with all Addenda thereto.

Engineer - The City of Sapulpa Engineers or their duly authorized agents.

Furnish - To supply.

Maintenance Bond - The approved form of security furnished by the Contractor and his surety as a guarantee that he will maintain The Work constructed by him in good condition for the period of time required.

Owner - The Owner named in the Contract Documents.

Performance Bond - The approved form of security furnished by the Contractor and his Surety as a guaranty of good faith on the part of the Contractor to execute The Work in accordance with the terms of the Contract.

Plan or Plans - All of the Drawings pertaining to the Contract and made a part thereof, including such supplementary Drawings as the Engineer may issue from time to time, in order to elucidate other Drawings for the purpose of showing changes in The Work as authorized under the Section, "Changes and Alterations", or for showing details not shown thereon.

Proposal - The offer of a Bidder to perform The Work described by the Contract Documents when made out and submitted on the prescribed Proposal Form, properly signed and guaranteed.

Proposal Guaranty - The cashier's check or Bidder's Bond accompanying the Proposal submitted by the Bidder, as a guarantee that the Bidder will enter into a Contract with the Owner for the Construction of The Work, if the Contract is awarded to him.

Provide - To furnish and erect or install.

Special Conditions - The special clauses setting forth conditions or requirements peculiar to the specific project involved, supplementing the Standard Specifications and taking precedence over any conditions or requirements of the Standard Specifications with which they are in conflict.

Specifications - The Legal and Procedural Documents, General Conditions of the Contract, together with the modifications thereof, and the detailed Technical Specification requirements, with all Addenda thereto.

Statutory Bond - The approved form of Surety set up and furnished by the Contractor and his Surety as a guarantee that he will pay, in full all bills and accounts for materials and labor used in the construction of The Work, as provided by law.

Subcontractor - Any person, firm or corporation with a direct contract with the Contractor who acts for or on behalf of the Contractor in executing any part of the Contract, but does not include one who merely furnishes material.

Surety - The person, firm or corporation who executes the Contractor's Performance Bond.

The Work - All work, including the furnishing of labor, materials, tools, equipment and incidentals, to be performed by the Contractor under the terms of the Contract.

Working Day - Any day, other than a legal holiday, Saturday or Sunday, on which the approximate normal working forces of the Contractor may proceed with regular work in a manner satisfactory to the Engineer for at least six (6) hours, toward completion of The Work. When it is desirable for any cause to increase the normal working schedule beyond there herein defined, the Contractor shall provide the Engineer with at least twenty-four (24) hours prior notice so that the Engineer and/or Owner may provide for inspection to The Work of the Contractor during such abnormal circumstances.

Written Notice - Written notice shall be considered as served when delivered in person or sent by registered mail to the individual, firm or corporation or to the last business address of such known to him who serves the notice.

SECTION 202 - PROPOSAL REQUIREMENTS AND CONDITIONS

202.01 CONTENTS OF PROPOSAL FORM

The Owner will furnish Bidders with Proposal Forms which will state the general location and description of the contemplated Work and which will contain a list of the items of Work to be done or materials to be furnished and upon which Bid prices are asked. The Contract Form will state the time limits for commencing and for completing The Work and will provide for entering the amount of the Proposal Guaranty. The Proposal Form will contain a Non-Collusion Affidavit.

202.02 INTERPRETATION OF PLANS AND SPECIFICATIONS

If any person contemplating submitting a Bid for the proposed Contract is in doubt as to the true meaning of any part of the Plans, Specifications or other proposed Contract Documents, he may submit to the Engineer a written request for an interpretation thereof. The person submitting such request will be responsible for its prompt delivery. An interpretation of the proposed Documents will be made only by Addendum duly issued and a copy of such Addendum will be mailed or delivered to each person receiving a set of such Documents. The Owner will not be responsible for any other explanations or interpretations of the proposed Documents.

The Drawings are not intended to be scaled for dimensions, and if dimensions not shown on the Drawings are

required, the Contractor shall request them from the Engineer. Where existing utility lines or other sub-surface obstructions are shown on the Drawings, the same have been located as nearly as practicable from information furnished by owners of such, and from such surface indications as may exist at the work site. Such obstructions are shown for the purpose of advising the Contractor that they may interfere with the work to be done hereunder, but not for the purpose of indicating that the work can be performed without such interference.

202.03 EXAMINATION OF DOCUMENTS AND SITE OF WORK

Bidders are required, prior to submitting any Proposal, to read carefully the Specifications, the Proposal, Contract and Bid Forms, to examine carefully all Plans on file with the Owner; to visit the site of The Work; to examine carefully local conditions; to inform themselves by their independent research of the difficulties to be encountered and judge for themselves of the accessibility of The Work and all attending circumstances affecting the cost of doing The Work or the time required for its completion and obtain all information required to make an intelligent Proposal. Bidders shall rely exclusively upon their own estimates, investigations and other data which are necessary for full and complete information upon which the Proposal may be based. It is mutually agreed that submission of a Proposal will be evidence that the Bidder has made the examinations and investigations required herein.

Where soundings are shown on the drawings, the depths are determined by driving a drill rod, using the chum method with water lubrication, to a maximum depth of nine feet or to refusal, whichever is lesser in depth. By showing soundings on the drawings, the City represents only that material of hardness and character which could be penetrated by a drill rod found above the depth of sounding as shown at the point where the drill rod was driven.

Where exploratory drilling is indicated to have been performed on the plans, boring logs will be available for review at the office of the Engineer. The logs will be furnished for information purposes only, and are not to be construed as a true representation of actual subsurface conditions.

202.04 PREPARATION OF PROPOSAL

The Bidder shall submit his Proposal on the Forms furnished by the Owner or the Engineer. All blank spaces in the Proposal Forms shall be correctly filled in and the Bidder shall state the prices, written in ink or typewritten, both in words and numerals, for which he proposes to do The Work contemplated or furnish the materials required.

The Contractor shall include in his Proposal the cash allowances that may be stated in the Special Conditions. The Contractor shall purchase the "Allowed Materials" by soliciting bids, as directed by the Engineer or Owner. If the actual price for purchasing the "Allowed Materials" is more or less than the "Cash Allowance", the Contract price shall be adjusted accordingly. The adjustment in Contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance, or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable sections of the Contract Specifications covering this work.

Wherever the estimated quantities of Work to be done and materials to be furnished under this Contract are shown in any of the Documents including the Proposal, they are given for use in comparing Bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete The Work contemplated by this Contract, and such increase or diminution shall in no way vitiate this Contract, nor shall any such increase or diminution give cause for claims or liability for damages.

All prices shall be written distinctly and legibly. In case of conflict between words and numerals, the words will govern. If the Proposal is submitted by an individual, his name must be signed by him or his duly authorized agent and his post office address given. If the Proposal is submitted by a firm or partnership, the name and post office address of each member must be given and the Proposal signed by a member of the firm or partnership as a person duly authorized. If the Proposal is made by a company or corporation, the company or corporate name

and the state under the laws of which said company or corporation is chartered and the business address must be given and one Proposal signed by an official or agent duly authorized. Powers of Attorney, authorizing agents or others to sign Proposals must be properly certified and must be in writing and on file with the Owner.

202.05 PROPOSAL AFFIDAVIT

Each Proposal or copy thereof shall be accompanied by a sworn statement in writing that the person signing the Proposal executed said Proposal in behalf of the Bidder therein named and that he had lawful authority to do so and that said Bidder has not directly or indirectly entered into any agreement, expressed or implied, with any other Bidder or Bidders having for its object the controlling of the amount of such Bid or any Bids, the limiting of Bids or Bidders, the parceling or farming out to any Bidder or Bidders or other persons of any part of the Contract or any Bid or the subject matter of the Bid or of the profits thereof, and that he has not and will not divulge said sealed Bid to any person whatever except those having a partnership or other financial interest with him in said Bid, until after the said sealed Bids are opened.

202.06 PROPOSAL GUARANTY

Proposals will not be considered unless the original filed with the Owner is accompanied by a Bidder's Bond or certified or cashier's check in the required amount, made payable to the Owner. The guaranty shall be in the amount as designated in the Advertisement. The Proposal Guaranty is required as evidence of good faith and as a guarantee that, if awarded the Contract, the Bidder will execute the Contract and furnish the required Bonds within the required time.

202.07 QUESTIONNAIRES

Experience and Equipment Questionnaire are not required for this project.

202.08 FILING OF PROPOSALS

Proposals shall be submitted in accordance with the requirements of the "Notice to Bidders" and the "Instructions to Bidders". Each proposal shall be plainly marked on the envelope with the word "Proposal" and the name of the project.

202.09 WITHDRAWAL OF PROPOSALS

Permission will not be granted to withdraw or modify any Proposal after it has been filed and before the time set for opening Proposals. Request for non-consideration of Proposals must be made in writing, addressed to the Owner and filed with the Owner or his duly authorized representative before the time set for opening Proposals. After other Proposals are opened and read, the Proposal for which withdrawal is properly requested will be returned unopened.

202.10 OPENING OF PROPOSALS

The original Proposals filed with the designated Owner's representative shall be opened in the presence of the Owner at the time stated in the Advertisement and shall thereafter remain on file in the office of said Owner's representative forty-eight (48) hours before any Contract will be entered into based on such Proposals.

Bidders are invited to attend the meeting for opening Proposals at the time set.

202.11 IRREGULAR PROPOSALS

Proposals will be considered irregular if they show any omissions, alterations of forms, additions or conditions not called for, unauthorized alternate Bids or irregularities of any kind. However, the Owner reserves the right to waive technicalities as to changes, alterations or reservations and make the Award in his best interest.

202.12 REJECTION OF PROPOSALS

The Owner reserves the right to reject any or all Proposals, and all Proposals submitted are subject to this reservation. Proposals may be rejected for any of the following specific reasons:

- A. Proposal received after the time limit for receiving Proposals as stated in the Advertisement.
- B. Proposal prices obviously unbalanced.
- C. Summation of Proposal prices on any one project above the Engineer's estimate of cost for such project.
- D. Proposal containing any irregularities.

202.13 DISQUALIFICATION OF BIDDERS

Bidders will be disqualified and their Proposals not considered for any of the following specific reasons:

- A. Where more than one Proposal for an individual, firm, partnership or corporation is filed under the same or different names and where such Proposals are not identical in every respect.
- B. Reasonable grounds for believing that any Bidder is interested in more than one Proposal for The Work contemplated or materials to be furnished.
- C. Reason for believing that collusion exists among the Bidders.
- D. The Bidder being in arrears on any existing contracts, interested in any litigation against the Owner or having defaulted on a previous contract.
- E. Lack of competency, as revealed by the Financial Statement, Experience and Equipment Questionnaires, etc.
- F. Uncompleted work which, in the judgment of the Owner, will hinder or prevent the prompt completion of additional Work, if Awarded.

SECTION 203 - AWARD AND EXECUTION OF CONTRACT

203.01 CONSIDERATION OF PROPOSALS

After the Proposals are opened, those Proposals containing unit prices will be tabulated for comparison on the basis of the quantities shown in the approximate estimate. Until the final award of the Contract, the Owner reserves the right to reject any or all Proposals, to waive irregularities and to advertise for new Proposals or proceed to do The Work otherwise when the best interests of the Owner will be promoted thereby.

203.02 AWARD OF CONTRACT

The Owner reserves the right to withhold the Award of the Contract for a reasonable period of time from the date of opening the Proposals and no Award will be made until the necessary investigations are made as to the responsibility of the low Bidder. No Contract will be Awarded until at least forty-eight (48) hours after opening the Proposals. The Awarding of the Contract shall give the Bidder no right of action or claim against the Owner upon such Contract until the execution of the Contract shall have been completed and the Contract delivered to the Contractor. The Owner reserves the right to Award all or any portion or portions of The Work.

203.03 RETURN OF PROPOSAL GUARANTY

As soon as the Proposal prices have been compared, the Owner may, at his discretion return the Proposal Guaranties accompanying those Proposals which, in his judgment, would not be considered in making the Award. After the Award is made, only the successful Bidder's Proposal Guaranty will be retained until the required Contract and Bonds have been executed, after which it will be returned to the Bidder. Should the Awarding of the Contract be delayed more than thirty (30) days, all Bidders' Guaranties will be returned, unless such delay is from causes beyond the control of the Owner and in such event, the Proposal and Bidder's Guaranty, of any Bidder, will be returned at the Bidder's option.

203.04 SURETY BONDS

With the execution and delivery of the Contract, the Contractor shall furnish and file with the Owner in the amounts required, the following Surety Bonds:

- A. A Performance Payment Bond in an amount equal to one hundred percent (100%) of the approximate total amount of the Contract, guaranteeing the full and faithful execution of The Work and performance of the Contract and for the protection of the Owner and all property owners interested against any damage by reason of negligence of the Contractor, or the improper execution of The Work or the use of inferior materials.
- B. A good and sufficient Statutory Bond in an amount equal to one hundred percent (100%) of the approximate total amount of the Contract, guaranteeing payment for all labor, materials and equipment used in the construction of the improvements.
- C. A good and sufficient Maintenance Bond in an amount equal to one hundred (100%) of the total amount of the Contract, guaranteeing the maintenance in good condition of such improvements for a period of one (1) year from and after the time of the completion and acceptance by the Owner of said improvements.

No Surety will be accepted who is now in default or delinquent on any Bond or who is interested in any litigation against the Owner. All Bonds shall be made on forms furnished by the Owner and shall be executed by Surety companies licensed to do business in the State of Oklahoma, and who are acceptable to the Owner. Each Bond shall be executed by the Contractor and the Surety.

Should any Surety on the Contract be determined unsatisfactory at any time by the Owner, notice will be given to the Contractor to that effect, and the Contractor shall forthwith substitute a new Surety or Sureties satisfactory to the Owner.

No payment will be made under the Contract until the new Surety or Sureties, as required, have qualified and have been accepted by the Owner. The Contract shall not be operative, nor shall any payments be due until approval of the Bonds has been made by the Owner.

203.05 EXECUTION OF CONTRACT

The person or persons, partnership, company, firm or corporation to whom a Contract is Awarded shall within ten (10) days after such Award sign the necessary agreements entering into the required Contract with the Owner and execute and deliver the required Bonds.

No Contract shall be binding on the Owner until it has been approved by the Owner's Attorney, executed by the Owner and delivered to the Contractor.

203.06 FAILURE TO EXECUTE CONTRACT

Upon failure of the Bidder to execute the required Bonds or to sign the required Contract within ten (10) days after the Contract is Awarded, he will be considered to have abandoned his Proposal and the Owner may annul the Award. By reason of the uncertainty of market prices of the materials and labor, and it being impracticable and extremely difficult to fix the amount of damages to which the Owner would be put by reason of Bidder's failure to execute said Bonds and Contract within ten (10) days, the Proposal Guaranty accompanying the Proposal shall be the agreed amount of damages which the Owner will suffer by reason of such failure on the part of the Bidder and shall thereupon be retained by the Owner as liquidated damages. The filing of a Proposal will be considered as an acceptance of this provision.

SECTION 204 - SCOPE OF WORK

204.01 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Plans and Specifications is that the Contractor furnish all labor and materials, equipment and transportation necessary for the proper execution of The Work unless specifically noted otherwise. The Contractor shall do all The Work shown on the Plans and described in the Specifications and all incidental work considered necessary to complete the project in a substantial and acceptable manner, and to fully complete the work or improvement, ready for use, occupancy and operation by the Owner.

204.02 CONFLICT

If there be conflicting variance between the Plans and the Specifications, the provisions of the Specifications shall control. In case of conflict between the General Conditions of the Contract, or any modifications thereof, and the Detailed Technical Specification Requirements, the Detailed Specification Requirements shall control.

Where a standard American Society for Testing Materials, American Concrete Institute, American Standards Association, American Water Works Association, or other agency designation is specified for a material, that designation shall be the current revision, either tentative or adopted. If a referenced specification is in disagreement with these specifications, the City of Sapulpa specifications shall govern.

204.03 DISCREPANCIES IN PLANS

Any discrepancies found between the Plans and Specifications and site conditions or any errors or omissions in the Plans or Specifications shall be immediately reported to the Engineer, who shall promptly correct such error or omission in writing. Any Work done by the Contractor after his discovery of such discrepancies, errors, or omissions shall be done at the Contractor's own risk.

204.04 ADEQUACY OF PLANS AND SPECIFICATIONS

Responsibility for adequacy of the design and for sufficiency of the Drawings and Specifications shall be borne by the Owner. The complete requirements of The Work to be performed under the Contract shall be set forth in Plans and Specifications to be supplied by the Owner through the Engineer or by the Engineer as representative of the Owner. Plans and Specifications furnished shall be in accordance with the Contract Documents and shall be true and accurate developments thereof.

The Plans show the location of certain existing surface and subsurface structures. The Owner assumes no responsibility for failure to show any or all structures on the Plans, or to show them in their exact location. It is mutually agreed such failure will not be considered sufficient basis for claims for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate substantial changes in the lines or grades or requires the building of a special structure, provision for which is not made in the Plans, in which case the provisions in these Specifications for "Extra Work" will apply.

The cost of adjusting water mains or services to grade shall be included in the prices Bid for other items of work, except where a specific item for this work is included in the Proposal.

Contractor shall be responsible for locating existing utilities, underground installations, and structures in the vicinity of construction prior to any Work being done. All conflicts should be reported to the Engineer. Any work done in the area of a conflict without the Engineer's knowledge shall be at the Contractor's own risk.

204.05 ADDITIONAL INSTRUCTIONS

Further instructions may be issued by the Engineer during the progress of The Work by means of Drawings or otherwise to make more clear or specific the Plans and Specifications, or as may be necessary to explain or illustrate changes in The Work to be done.

204.06 COPIES OF DRAWINGS AND SPECIFICATIONS FURNISHED

Except as provided for otherwise, all required copies of Plans and Specifications necessary for the execution of The Work shall be furnished to the Contractor without charge.

One complete set of all Plans and Specifications shall be maintained at the job site and shall be available to the Engineer at all times.

All original or duplicated Plans and Specifications and other data prepared by the Engineer shall remain the property of the Engineer, and they shall not be re-used on other work, but shall be returned to him upon completion of The Work.

204.07 DIMENSIONS

Figured dimensions on the Plans will be used in preference to scaling the Plans. Where The Work of the Contractor is affected by finish dimensions, these shall be determined by the Contractor at the site, and he shall assume the responsibility therefore.

204.08 SAMPLES

All samples called for in the Specifications or required by the Engineer shall be furnished by the Contractor and shall be submitted to the Engineer for his approval. Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for the consideration of the samples submitted.

The Contractor shall furnish such samples of material as may be required for examination and test. All materials and workmanship shall be in accordance with approved samples. All samples of materials for tests shall be taken according to methods provided in the Specifications.

204.09 SHOP DRAWINGS

The Contractor shall provide shop drawings, settings, schedules and such other drawings as may be necessary for the prosecution of The Work in the shop and in the field as required by the Plans, Specifications or Engineer's instructions. Deviations from the Plans and Specifications shall be called to the attention of the Engineer at the time of the first submission of shop drawings and other drawings for approval. The Engineer's approval of any drawings shall not release the Contractor from responsibility for such deviations. Shop drawings shall be submitted according to the following schedule:

- A. Four (4) copies shall be submitted at least thirty (30) days before the materials indicated thereon are to be needed, or earlier if required to prevent delay of The Work.
- B. The Engineer shall, within fourteen (14) days of the submittal of any shop drawings, return one copy to the Contractor marked with all corrections and changes.

- C. The Contractor shall then correct the shop drawings to conform to the corrections and changes requested by the Engineer.
- D. Following completion of such corrections and changes, the Contractor shall furnish the Engineer three (3) copies of the shop drawings conforming to the required corrections and changes.

204.10 "OR EQUAL" CLAUSE

Whenever a material or article required is specified or shown on the Plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory providing the material or article so proposed is of equal substance and function in the Architect/Engineer's opinion. It shall not be purchased or installed without the Engineer's written approval.

204.11 SUBMITTALS

The Contractor shall furnish four copy's of complete catalog data for every manufactured item of equipment and all components to be used in The Work, including specific performance data, material description, rating, capacity, working pressure, material gage or thickness, brand name, catalog number and general type as appropriate:

- A. This submission shall be compiled by the Contractor and approved by the Engineer before any of the equipment is ordered.
- B. After written approval, this submission shall become a part of the Contract, and may not be deviated from except upon written approval of the Engineer.
- C. Catalog data for equipment approved by the Engineer does not in any case supersede the Engineer's Contract Documents. The approval of the Engineer shall not relieve the Contractor from responsibility for deviations from Plans or Specifications, nor shall it relieve him from responsibility for errors of any sort in the items submitted. The Contractor shall check The Work described by the catalog data with the Engineer's Contract Documents for deviations and errors.
- D. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Plans and Specifications.
- E. Where equipment requiring different arrangement of connections from those shown is approved, it shall be the responsibility of the Contractor to install the equipment to operate properly, and in harmony with the intent of the Drawings and Specifications, and to make all changes in The Work required by the different arrangements of connections.

204.12 SURVEYS

Unless otherwise specified, the Owner shall establish all base lines for the location of the principal component parts of The Work together with a suitable number of bench marks adjacent to The Work. Based upon the information provided by the Owner, the Contractor shall develop and make all detail surveys necessary for construction, including slope stakes, batter boards, stakes for pile locations and other working points, lines and elevations. The Contractor shall have the responsibility to carefully preserve bench marks, reference points and stakes, and, in the case of destruction thereof by the Contractor or resulting from his negligence the Contractor shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.

The Contractor shall provide an experienced instrument man, competent assistants, and such instruments, tools, stakes, and other materials as required to complete the survey, layout, measurement work. In addition, the

Contractor shall furnish, without charge, competent men from his force and such tools, stakes, and other materials as the Engineer may require in establishing or designating control points or in checking survey, layout, and measurement work performed by the Contractor.

The Contractor shall keep the Engineer informed, a reasonable time in advance, of the times and places at which he wishes to do work, so that horizontal and vertical control points may be established and any checking deemed necessary by Engineer may be done with minimum inconvenience to the Engineer and minimum delay to the Contractor.

204.13 SPECIAL CONDITIONS

Should any work or any conditions which are not thoroughly or satisfactorily stipulated or covered by the general or standard specifications be anticipated on any proposed work, "Special Conditions" for such work may be prepared and shall be considered as a part of the Specifications and Contract.

204.14 INCREASED OR DECREASED QUANTITIES OF WORK

The Owner reserves the right to alter the quantities of The Work to be performed or to extend or shorten the improvement at any time when and as found necessary, and the Contractor shall perform The Work as altered, increased or decreased, at the Contract unit prices. No allowance will be made for any change in anticipated profits nor shall such changes be considered as waiving or invalidating any condition or provisions of the Contract.

204.15 ALTERATIONS OF PLANS AND SPECIFICATIONS

The Owner reserves the right to make such changes in the Plans and in the character of The Work as may be necessary or desirable to ensure completion of The Work in the most satisfactory manner, provided such changes do not materially alter the original Plans and Specifications or change the general nature of The Work as a whole. Such changes shall not be considered as waiving or invalidating any condition or provision of the Contract.

SECTION 205 - ENGINEER - OWNER - CONTRACTOR RELATIONS

205.01 ENGINEER'S RESPONSIBILITY AND AUTHORITY

All Work shall be done under the general engineering supervision of the Engineer to his satisfaction.

The Engineer shall decide all questions which arise as to the quality and acceptability of materials furnished, Work performed, manner of performance, rate of progress of The Work, interpretation of the Plans and Specifications, acceptable fulfillment of the Contract, compensation, mutual rights between Contractors under these Specifications and suspension of Work. The Engineer shall have the right to establish any sequence or priority of operation in the interest of desirable cooperation with other work. He shall determine the amount and quality of Work performed and materials furnished and his decisions and estimates shall be final. His estimate in such event shall be a condition precedent to the right of the Contractor to receive money due him under the Contract.

The authority of the Engineer shall to be construed to include the authority to waive, revise or modify Specifications, as herein set forth, either as to kind, type or quality of materials or manner or quality of construction.

205.02 SUSPENSION OF WORK

The Engineer shall have the authority to suspend The Work, wholly or in part, for such period or periods, based on his judgment, as he may deem necessary. Reasons for such suspension shall be given to the Contractor or his superintendent and can include, but shall not be restricted to, inclement weather, non-compliance with Plans or Specifications, improper or insufficient safety precautions, or improper sequencing of Work.

205.03 INSPECTION OF WORK

All materials and each part or detail of The Work shall be subject at all times to inspection by the Engineer, and the Contractor will be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship, and the diligent execution of the Contract. Such inspection may include mill, plant or shop inspection, and any material furnished under these Specifications is subject to such inspection. The Engineer shall be allowed access to all parts of The Work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

205.04 EXAMINATION OF COMPLETED WORK

At the Engineer's request, the Contractor, at any time before acceptance of The Work, shall remove or uncover such portions of the finished Work as may be directed. After examination, the Contractor shall restore said portions of The Work to the standard required by the Specifications. Should The Work thus exposed or examined prove acceptable, the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work, but should The Work so exposed or examined prove unacceptable, the uncovering, removing and replacing shall be at the Contractor's expense.

205.05 CONTRACTOR'S SUPERINTENDENT

A qualified superintendent, who is acceptable to the Engineer, shall be maintained on The Work and give efficient supervision to The Work until its completion. The superintendent shall have full authority to act in behalf of the Contractor, and all directions given to the superintendent shall be considered given to the Contractor. In general, the Engineer's instructions shall be confirmed in writing and always upon written request from the Contractor.

205.06 LANDS BY OWNER

The Owner shall provide the lands shown on the Plans upon which The Work under the Contract is to be performed and to be used for right-of-way for access. Any delay in furnishing these lands by the Owner shall be deemed proper clause for adjustment in the time of completion.

205.07 LANDS BY CONTRACTOR

Any additional land and access thereto not shown on the Plans that may be required for temporary construction facilities or for storage of materials shall be provided by the Contractor with no liability to the Owner. The Contractor shall confine his apparatus and storage of materials and operation of his workmen to those areas described in the Plans and Specifications and such additional areas which he may provide as approved by the Engineer.

205.08 PRIVATE PROPERTY

The Contractor shall not enter upon private property for any purpose without obtaining permission, and he shall be responsible for the preservation of all public property, trees, monuments, etc. along and adjacent to the street and/or right-of-way, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits and other underground structures, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

205.09 ASSIGNMENT OF CONTRACT

Neither the Contractor nor the Owner shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

205.10 REMOVAL OF CONSTRUCTION EQUIPMENT, TOOLS AND SUPPLIES

At the termination of this Contract, before acceptance of The Work by the Engineer, the Contractor shall remove all of his equipment, tools and supplies from the property of the Owner. Should the Contractor fail to remove such equipment, tools, and supplies, the Owner shall have the right to remove them at the Contractor's expense.

205.11 SUSPENSION OF WORK BY OWNER FOR CAUSE

The Work or any portion thereof may be suspended at any time by the Owner for good and valid cause provided that he gives the Contractor five (5) days written notice of suspension, which shall set forth the date on which Work is to be resumed. The Contractor shall resume The Work upon written notice from the Owner and within ten (10) days after the date set forth in the notice of suspension. If the Owner does not give written notice to resume Work within ten (10) days of the date fixed in the notice of suspension, the Contractor may abandon that portion of The Work so suspended and shall be entitled to payment in accordance with Section 209.10.

205.12 OWNER'S RIGHT TO CORRECT DEFICIENCIES

Upon failure of the Contractor to perform The Work in accordance with the Contract Documents, including any requirements with respect to the Schedule of Completion, and after five (5) days written notice to the Contractor, and receipt of written approval from the Engineer, the Owner may, without prejudice to any other remedy he may have, correct such deficiencies.

205.13. OWNER'S RIGHT TO TERMINATE CONTRACT AND COMPLETE THE WORK

The Owner shall have the right to terminate the employment of the Contractor after giving ten (10) days written notice of termination to the Contractor in the event of any default by the Contractor. In the event of such termination, the Owner may take possession of The Work and all materials, tools and equipment thereon and may finish The Work by whatever method and means he may select. It shall be considered a default by the Contractor whenever he shall:

- A. Declare bankruptcy, become insolvent or assign his assets for the benefit of his creditors.
- B. Disregard or violate important provisions of the Contract Documents or Engineer's instructions, or fail to prosecute The Work according to the agreed schedule of completion, including extensions thereof.
- C. Fail to provide a qualified superintendent, competent workmen or subcontractors, or proper materials, or fail to make prompt payment therefore.

205.14 SEPARATE CONTRACTS

The Owner may let other Contracts in connection with The Work of the Contractor. The Contractor shall cooperate with other Contractors with regard to storage of materials and execution of their Work. It shall be the Contractor's responsibility to inspect all Work by other Contractors affecting his Work and to report to the Engineer any irregularities which will not permit him to complete his Work in a satisfactory manner. His failure to notify the Engineer of such irregularities shall indicate the Work of other Contractors has been satisfactorily completed to receive his Work. The Contractor shall not be responsible for defects of which he could not have known, which develop in the work of others after the work is completed. It shall be the responsibility of the Contractor to measure the completed Work in place and report to the Engineer immediately any difference between contemplated Work by others and the Plans.

205.15 SUBCONTRACTS

At the time specified by the Contract Documents or when requested by the Engineer, the Contractor shall submit in writing to the Owner for approval of the Engineer the names of the subcontractors proposed for The Work. Sub-contractors may not be changed except at the request or with the approval of the Engineer. The Contractor

is responsible to the Owner for the acts and omissions of his subcontractors, and of their direct and indirect employees, to the same extent as he is responsible for the acts and omissions of his employees. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the Owner. The Contractor shall bind every subcontractor by the terms of the Contract Documents.

For convenience of reference and to facilitate the letting of contracts and subcontracts, the Specifications are separated into titled sections. Such separations shall not, however, operate to make the Engineer an arbiter to establish limits to the contracts between Contractor and subcontractors.

205.16 WORK DURING AN EMERGENCY

The Contractor shall perform any Work and shall furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases he shall notify the Engineer of the emergency and its nature as soon as practicable and he shall proceed to properly protect both life and property.

205.17 ORAL AGREEMENTS

No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

SECTION 206 - MATERIALS AND WORKMANSHIP

206.01 MATERIALS FURNISHED BY THE CONTRACTOR

All materials used in The Work shall meet the requirements of the respective Specifications, and no material shall be used until it has been approved by the Engineer. All materials not otherwise specifically indicated shall be furnished by the Contractor. Other materials shall be immediately removed from the job site at the request of the Engineer.

All materials furnished by the Contractor shall be manufactured within the United States and shall be new and unused, unless otherwise specified or approved in writing by the Engineer.

206.02 MATERIALS FURNISHED BY THE OWNER

Materials specifically indicated shall be furnished by the Owner. The fact that the Owner is to furnish material is conclusive evidence of its acceptability for the purpose intended, and the Contractor may continue to use it until otherwise directed. If the Contractor discovers any defect in material furnished by the Owner, he shall notify the Engineer. Unless otherwise noted or specifically stated, materials furnished by the Owner, which are not of local occurrence, are considered to be f.o.b. the nearest railroad station. The Contractor shall be prepared to unload and properly protect all such material from damage or loss. The Contractor shall be responsible for material loss or damage after receipt of material at the point of delivery.

206.03 STORAGE OF MATERIALS

Materials shall be so stored as to insure the preservation of their quality and fitness for The Work. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces, and not on the ground, and/or they shall be placed under cover. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes without the written permission of the Owner or Lessor.

206.04 CHARACTER OF WORKMEN

The Contractor shall at all times be responsible for the conduct and discipline of his employees and/or any subcontractor or persons employed by subcontractors. All workmen must have sufficient knowledge, skill and experience to perform properly the work assigned to them. Any foreman or workman employed by the Contractor or subcontractor who, in the opinion of the Engineer, does not perform his Work in a skillful manner, or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the Engineer, be discharged immediately and shall not be employed again in any portion of The Work without the approval of the Engineer.

206.05 REJECTED WORK AND MATERIALS

All materials which do not conform to the requirements of the Contract Documents, are not equal to samples approved by the Engineer, or are in any way unsatisfactory or unsuited to the purpose for which they are intended, shall be rejected. Any defective Work whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, shall be removed within ten (10) days after written notice is given by the Engineer, and The Work shall be re-executed by the Contractor. The fact that the Engineer may have previously overlooked such defective Work shall not constitute an acceptance of any part of it.

Should the Contractor fail to remove rejected Work or materials within ten (10) days after written notice to do so, the Owner may remove them and may store the materials and the cost of such removal to be taken out of the money that may be due or may become due the Contractor on account of or by virtue of this Contract

Correction of faulty Work after final payment shall be in accordance with the requirements of Section 209.17.

206.06 MANUFACTURER'S DIRECTIONS

Manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer unless herein specified to the contrary.

206.07 CUTTING AND PATCHING

The Contractor shall do all necessary cutting and patching of The Work that may be required to properly receive The Work of the various trades or as required by the Plans and Specifications to complete the structure. He shall restore all such cut or patched work as directed by the Engineer. Cutting of existing structure that shall endanger The Work, adjacent property, workmen or the public shall not be done unless approved by the Engineer and under his direction.

206.08 CLEANING UP

The Contractor shall remove from the Owner's property, and from all public and private property, all temporary structures, rubbish and waste materials resulting from his operation or caused by his employees, and shall remove all surplus materials leaving the site smooth, clean and true to line and grade.

206.09 GUARANTY PERIOD

The Contractor shall warrant all equipment furnished and Work performed by him for a period of two (2) years from the date of written acceptance or beneficial occupancy of The Work, whichever is earlier.

206.10 SALVAGEABLE MATERIALS

All materials which are salvageable, as determined by the Engineer and/or Owner, shall remain the property of the Owner. Those materials deemed to be unsalvageable shall be properly disposed of by the Contractor.

SECTION 207 - INSURANCE, LEGAL RESPONSIBILITY AND PUBLIC SAFETY

207.01 INSURANCE

The Contractor shall secure and maintain such insurance from an insurance company authorized to write casualty insurance in the State where The Work is located as will protect himself, his subcontractors and the Owner from claims for bodily injury, death or property damage which may arise from operations under this Contract. The Contractor shall not commence Work under this Contract until he has obtained all insurance required under this paragraph and shall have filed the certificate of insurance or the certified copy of the insurance policy with the Owner. Each insurance policy shall contain a clause providing that it shall not be cancelled by the insurance company without ten (10) days written notice to the Owner of intention to cancel. The amounts of such insurance shall not be less than the following:

A. Workmen's Compensation and Employer's Liability Insurance

shall be secured and maintained as required by the State where The Work is located.

B. Public Liability, Bodily Injury and Property Damage:

- | | |
|---|--------------|
| 1. Personal Injury, each person | \$ 100,000 |
| 2. Personal Injury, each accident | \$ 1,000,000 |
| 3. Property Damage, each occurrence | \$ 100,000 |

C. Automobile and Truck Public Liability, Bodily Injury and Property Damage:

- | | |
|---|--------------|
| 1. Personal Injury, each person | \$ 100,000 |
| 2. Personal Injury, each accident | \$ 1,000,000 |
| 3. Property Damage, each accident | \$ 100,000 |

207.02 INDEMNITY

The Contractor shall indemnify and save harmless the Owner from and against all losses and all claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against him by reason of any omission or act of the Contractor, his agents or employees in the execution of The Work or in the guarding of it. The Contractor shall obtain in the name of the Owner and shall maintain and pay the premiums for such insurance in such amount and with such provisions as will protect the Owner from contingent liability under this Contract and a copy of such insurance policy or policies shall be delivered to the Owner. Full compliance by the Owner with the terms and provisions of such insurance policy or policies shall be a condition precedent to the Owner's right to enforce against the Contractor any provisions of this article.

207.03 OTHER INSURANCE

In addition to such other insurance as the Contractor elects to carry for his own protection and the insurance requirements of 207.01, he shall secure and maintain in the name of the Owner policies upon such structures and material and in such amounts as shall be designated in the Special Conditions, if applicable. The policies shall be secured from a company which is satisfactory to the Owner and delivered to the Owner.

207.04 PATENTS AND ROYALTIES

If any design, device, material or process covered by letters, patent or copy right is used by the Contractor, he shall provide for such use by legal agreement with the owner of the patent or a duly authorized licensee of such owner, and shall save harmless the Owner from any and all loss or expense on account thereof, including its use by the Owner.

207.05 PERMITS

All permits and licenses necessary for the prosecution of The Work not furnished by the Owner or Engineer shall be secured by the Contractor. All permit fees will be waived by the City of Sapulpa for this project.

207.06 LAWS TO BE OBSERVED

The Contractor shall give all notices and comply with all Federal, State and local laws, ordinances and regulations in any manner affecting the conduct of The Work, and all such orders and decrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over The Work, and shall indemnify and save harmless the Owner against any claim or liability arising from, or based on, the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

207.07 WARNING SIGNS AND BARRICADES

The Contractor shall provide adequate signs, barricades, red lights and watchmen and take all necessary precautions for the protection of The Work and the safety of the public. All barricades and obstructions shall be protected at night by red signal lights which shall be kept burning from sunset to sunrise. Barricades shall be of substantial construction and shall be painted white or whitewashed to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricade or detours exist.

207.08 PUBLIC SAFETY AND CONVENIENCE

Danger Signals and Protection: When the Contractor is performing any type of construction or excavation work, or is stockpiling or storing any materials or equipment upon or adjacent to any street, alley, sidewalk, residence, public ground, or other location that is likely to be subject to pedestrian or vehicular traffic, he shall furnish, erect, and maintain substantial guard rails, safety fencing, lights, and traffic control devices around the project to protect pedestrians, animals, and vehicles from injury or damage. All traffic control shall be in accordance with the Oklahoma Department of Transportation Standards and Procedures for Street Use and Temporary Traffic Control. Safety and traffic control devices shall be installed and removed only at the direction of the Engineer. The Contractor shall provide sufficient proper signals and flagmen for warning during blasting operations.

Interference with Traffic: The Contractor shall construct and maintain adequate and safe bridges or crosswalks over excavations, where required. When a roadway or sidewalk is not closed, the Contractor shall provide a safe substitute route for any portion obstructed by his operations. If a roadway or sidewalk is closed to traffic, the Contractor shall provide and make detours. As directed by the Engineer, construction across roadways or sidewalks may be done by open excavation.

Excavations: The Contractor shall adequately shore, or sheet, and brace the excavation, or shall slope the sides of the trench in accordance with the State of Oklahoma Department of Labor requirements.

The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of The Work, and to insure the protection of persons and property in a manner satisfactory to the Engineer. No road or street shall be closed to the public except with the permission of the Engineer and proper governmental authority. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Engineer.

207.09 CROSSING UTILITIES

Pipelines and other existing underground installations and structures in the vicinity of the work to be done hereunder are indicated on the drawings according to information available to the Engineer; however, all lines actually existing may not be shown. The Contractor shall make every effort to locate all underground pipelines, conduits, and structures by contacting owners of underground utilities and by prospecting in advance of trench excavation.

When new construction crosses highways, streets or utilities under the jurisdiction of State, County, City or other public agency, public utility or private entity, written permission from the proper authority shall be secured before executing such new construction. A copy of this written permission must be filed with the Owner before any work is done. The contractor will be required to furnish a release from the proper authority before final acceptance of The Work.

When The Work encroaches upon the right-of-way of any railway, the Owner will secure for the Contractor, all the necessary contracts, easements or authority to enter upon such right-of-way for the prosecution and completion of The Work. All construction shall be in strict accord with the pertinent provisions of the railway authority. The Contractor shall take such special precautions for the safety of The Work and the travelling public as may be necessary by sheeting, bracing and thoroughly supporting the sides of any excavation and supporting and protecting any adjacent structures, so as not to interfere with the operation of the railroad.

207.10 SANITARY PROVISION

The Contractor shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of the local and State departments of health and as directed by the Engineer.

207.11 USE OF EXPLOSIVES

Explosives: In handling explosives used during the construction of the project, the Contractor shall adhere to all Federal and State Laws and City Ordinances regulating the purchase, transportation, storage, handling, and use of such explosives. No blasting shall be done without obtaining a "Blasting Permit" from the City and presence of the Inspector. All equipment, tools, and materials used shall be of the correct type and in good conditions for the operation. The Contractor shall take all necessary precautions to avoid damage to property resulting from the transportation, storage, handling and use of explosives. Before blasting, the Contractor shall cover the area to be blasted with steel mesh mat or other suitable materials, reinforced with timbers of sufficient weight so that rock and debris will be confined to the excavation. Any blasting within ten feet of a water, sewer, gas, or pipe line shall be done with very light charges, and utmost care should be taken to avoid disturbance to these lines. All locations for blasting shall be subject to approval of the Engineer.

Should the Contractor elect to use explosives in the prosecution of the work, the utmost care shall be exercised so as not to endanger life or property and the Contractor shall carry on such work in accordance with the requirements of the Technical Specifications and in compliance with the municipal ordinances and all laws of the State of Oklahoma. The Contractor shall notify the proper representatives of any public service corporation, any company or any individual not less than eight (8) hours in advance of any blasting which might damage their or his property along or adjacent to The Work.

Where explosives are stored or kept, they shall be stored in a safe and secure manner and all storage places shall be marked plainly (DANGEROUS EXPLOSIVES) and shall be under the care of a competent watchman at all times.

207.12 PUBLIC UTILITIES AND PUBLIC PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner of a public utility, such owner will, upon proper application by the Contractor, be notified by the Engineer to change or move such property within a specified time, and the Contractor shall not interfere with such property until ordered to do so by the Engineer. The right is reserved to the Owner of public utilities to enter upon the limits of the Contract for the purpose of making such repairs or changes of their property that may be necessary by performance of the Contract. The municipality in which the performance of the Contract is to be executed shall have the privilege of entering upon the limits of the Contract for the purpose of repairing or relaying sewer and water lines and appurtenances, repairing culverts or storm drains, and for making other repairs, changes or extensions to any property owned by the municipality.

207.13 TEMPORARY SEWER AND DRAIN CONNECTIONS

When existing sewers have to be taken up or removed, the Contractor, at his own expense, shall provide and maintain temporary outlets and connections for all private or public drains, sewers or sewer inlets. He shall also take care of all sewage and drainage which will be received from these drains, sewers and sewer inlets; and for this purpose he shall provide and maintain at his own expense adequate pumping facilities and temporary outlets or diversions. He shall construct such troughs, pipes or other structures necessary and be prepared at all times to dispose of drainage and sewage received from these temporary connections until such time as the permanent connections are built and in service. The sewers and connections shall be kept in service and maintained under the contract save where specified or ordered to be abandoned by the Engineer.

All water and sewage shall be disposed of in a satisfactory manner so that nuisance is created and that The Work under construction will be adequately protected.

207.14 ARRANGEMENT AND CHARGE FOR WATER FURNISHED BY A MUNICIPALITY

If the Contractor desires to use municipal water he shall pay the rate established by Municipal Ordinances for such service and he shall make complete and satisfactory arrangements with the Municipal Water Department for so doing. Meters will be used and the Contractor shall deposit the cost of the water meter with the Water Department and will pay for all repairs and maintenance of the meter for the period which he has the meter in use or in his possession.

207.15 USE OF FIRE HYDRANTS

The Contractor or his employees shall not open, turn off, interfere with, attach pipe or hose to or connect anything with any fire hydrant, stop valve or stop cock or tap any water main belonging to the municipality, unless duly authorized to do so by the municipality.

SECTION 208 - PROGRESS AND COMPLETION OF WORK

208.01 NOTICE TO PROCEED

Following the execution of the Contract by the Owner, written Notice to Proceed with The Work shall be given to the Contractor. The Contractor shall begin and shall prosecute The Work regularly and uninterruptedly thereafter (unless otherwise directed in writing by the Owner) with such force as to secure the completion of The Work within the time stated in the Proposal.

208.02 CONTRACT TIME

The Contractor shall complete, in an acceptable manner, all of The Work Contracted for in the time stated in the Proposal. Computation of Contract time shall commence on the date specified on the Notice to Proceed. If no date is specified, Contract time shall commence on the tenth (10th) day following the date of mailing, by regular mail, of the Notice to Proceed. Every calendar day following, except as herein provided, shall be counted as a working day.

208.03 SCHEDULE OF COMPLETION

The Contractor shall submit, at such times as may reasonably be requested by the Engineer, schedules which shall show the order in which the Contractor proposes to carry on The Work, with dates at which the Contractor will start the several parts of The Work, and estimated dates of completion of the several parts.

208.04 CHANGES IN THE WORK

The Owner may, as the need arises, order changes in The Work through additions, deletions or modifications without invalidating the Contract. Compensation and time of completion affected by the change shall be adjusted at the time of ordering such change.

208.05 EXTRA WORK

New and unforeseen items of work found to be necessary and which cannot be covered by any item or combination of items for which there is a Contract price shall be classed as Extra Work. The Contractor shall do such Extra Work and furnish such materials as may be required for the proper completion for construction of the whole Work contemplated upon written order from the Owner as approved by the Engineer. In the absence of such written order, no claim for Extra Work shall be considered. Extra Work shall be performed in accordance with these Specifications where applicable and work not covered by the Specifications or Special Conditions shall be done in accordance with the best practice as approved by the Engineer. Extra Work required in an emergency to protect life and property shall be performed by the Contractor as required.

208.06 EXTENSION OF CONTRACT TIME

A delay beyond the Contractor's control occasioned by an Act of God, or act or omission on the part of the Owner, or by strikes, lockouts, fire, etc., may entitle the Contractor to an extension of time on which to complete The Work as determined by the Engineer, provided, however, that the Contractor shall immediately give written notice to the Engineer of the cause of such delay.

208.07 FAILURE TO COMPLETE WORK ON TIME

The time of completion is the essence of the Contract. For each working day that any Work shall remain uncompleted after the time agreed upon in the Proposal and the Contract, or as automatically increased by additional Work or materials ordered after the Contract is signed, or the increased time granted by the Owner for the completion of said Work, the sum per day given in the following schedule, unless otherwise specified in the Proposal or Special Conditions, will be deducted from the monies due the Contractor, not as a penalty but as liquidated damages:

<u>Amount of Contract</u>	<u>Amount of Liquidated Damages per Day</u>
Less than \$25,000.00	50.00
\$25,000.00 and less than \$50,000.00.	100.00
\$50,000.00 and less than \$100,000.00	200.00
\$100,000.00 and less than \$250,000.00.	300.00
\$250,000.00 and less than \$500,000.00.	400.00
\$500,000.00 and less than \$1,000,000.00.	500.00
Over \$1,000,000.00	1,000.00

The sum of money thus deducted for such delay, failure or non-completion is not to be considered as a penalty, but should be deemed taken and treated as reasonable liquidated damages since it would be impracticable and extremely difficult to fix the actual damages.

208.08 USE OF A SECTION OR PORTION OF THE WORK

Whenever, at the request of the Owner and in the opinion of the Engineer, any portion of The Work has advanced sufficiently, it may be put into use by the Owner through the written order of the Engineer. This beneficial occupancy by the Owner will be permitted only after receipt of written notice of release by the Contractor's Surety and Insurance carrier. The Guaranty Period, as defined elsewhere in these Specifications, for all Work covered by the Engineer's written order shall commence at the start of beneficial occupancy by the Owner.

SECTION 209 - MEASUREMENT AND PAYMENT

209.01 DETAILED BREAKDOWN OF CONTRACT AMOUNT

Except in cases where unit prices form the basis for payment under the Contract, the Contractor shall within ten (10) days of receipt of Notice to Proceed, submit a complete breakdown of the Contract Amount showing the value assigned to each part of The Work, including an allowance for profit and overhead. Upon approval of the breakdown of the Contract Amount by the Engineer, it shall be used as the basis for all Requests for Payment.

209.02 REQUESTS FOR PAYMENT

The Contractor may submit periodically but not more than once each month a Request for Payment for work done and materials delivered and stored on the site. The Contractor shall furnish the Engineer all reasonable facilities required for obtaining the necessary information relative to the progress and execution of The Work. Payment for materials stored on the site will be conditioned upon evidence submitted to establish the Owner's title to such materials. Each Request for Payment shall be computed from the work completed on all items listed in the Detailed Breakdown of Contract Amount, less ten percent (10%) to be retained until final completion and acceptance of The Work, and less previous payments, provided that any time after fifty percent (50%) of the work has been satisfactorily completed, the Owner may reduce the percentage retainage. Where unit prices are specified, the Request for Payment shall be based on the quantities completed.

209.03 ENGINEER'S ACTION ON A REQUEST FOR PAYMENT

Within ten (10) days of submission of any Request for Payment by the Contractor the Engineer shall:

- A. Approve the Request for Payment, as submitted.
- B. Approve such other amount as he shall decide is due the Contractor, informing the Contractor in writing of his reasons for approving the amended amount.
- C. Withhold the Request for Payment, informing the Contractor in writing of his reasons for withholding it.

209.04 OWNER'S ACTION ON AN APPROVED REQUEST FOR PAYMENT

Within thirty (30) days from the date of approval of a Request for Payment by the Engineer, the Owner shall:

- A. Pay the Request for Payment as approved.
- B. Pay such other amount in accordance as herein provided as he shall decide is due the Contractor, informing the Contractor and the Engineer in writing of his reasons for paying the amended amount.
- C. Withhold payment in accordance as herein provided informing the Contractor and the Engineer of his reasons for withholding payment.

209.05 OWNER'S RIGHT TO WITHHOLD PAYMENT OF AN APPROVED REQUEST FOR PAYMENT

The Owner may withhold payment in whole or in part on an approved Request for Payment to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to approval of a Request for Payment by the Engineer:

- A. Defective work.
- B. Evidence indicating the probable filing of claims by other parties against the Contractor.
- C. Failure of the Contractor to make payments to subcontractors, material suppliers or labor.

- D. Damage to another contractor.

209.06 RESPONSIBILITY OF THE CONTRACTOR

Unless specifically noted otherwise, the Contractor shall furnish all materials and services, and perform all The Work described by the Contract Documents or shall have all materials and services furnished and all The Work performed at his expense. It shall also be the Contractor's responsibility to pay for:

- A. Replacement of survey bench marks, reference points and stakes provided by the Owner under Section 204.12.
- B. Lands by Contractor provided in accordance with Section 205.07.
- C. Insurance obtained in accordance with Sections 207.01 and 207.02.
- D. Other insurance obtained in accordance with Section 207.03.
- E. Performance Payment Bond obtained in accordance with Section 203.04.
- F. Statutory Bond obtained in accordance with Section 203.04.
- G. Maintenance Bond obtained in accordance with Section 203.04.
- H. Royalties required under Section 207.04.
- I. Permits and licenses required of the Contractor and all subcontractors.

209.07 PAYMENT FOR UNCORRECTED WORK

If, in the opinion of the Engineer, it is undesirable to replace any defective or damaged material or to reconstruct or correct any portion of The Work injured or not performed in accordance with the Contract Documents, the compensation to be paid the Contractor hereunder shall be reduced by such amount as in the judgment of the Architect/Engineer shall be equitable.

209.08 PAYMENT FOR REJECTED WORK AND MATERIALS

The removal of work and materials rejected under Section 206.05 and the re-execution of acceptable work by the Contractor shall be at the expense of the Contractor, and he shall pay the cost of replacing The Work of other contractors destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.

Removal of rejected Work or materials and storage of materials by the Owner shall be paid by the Contractor within thirty (30) days after written notice to pay is given by the Owner. If the Contractor does not pay the expenses of such removal and after ten (10) days written notice being given by the Owner of his intent to sell the materials, the Owner may sell the materials at auction or at private sale, and shall pay to the Contractor the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the Contractor.

209.09 PAYMENTS FOR EXTRA WORK

Written notice of claims for payments for Extra Work shall be given by the Contractor within ten (10) days after receipt of instructions from the Owner as approved by the Engineer to proceed with the Extra Work, and also before any work is commenced, except in emergency endangering life or property. No claim shall be valid unless so made. In all cases, the Contractor's itemized estimate sheets showing all labor and material shall be submitted to the Engineer. The Owner's order for Extra Work shall specify any extension of the Contract time and one of the following methods of payment:

- A. Unit prices or combinations of unit prices which formed the basis of the original Contract.
- B. A lump sum based on the Contractor's estimate, accepted by the Owner, and approved by the Engineer.
- C. Actual cost plus fifteen percent (15%) for overhead and profit.

209.10 PAYMENT FOR WORK SUSPENDED BY THE OWNER

If The Work or any part thereof shall be suspended by the Owner and abandoned by the Contractor, as provided in Section 205.11, the Contractor will then be entitled to payment for all work done on the portions so abandoned, plus fifteen percent (15%) of the value of the abandoned work to compensate for overhead, plant expense and anticipated profit.

209.11 PAYMENT FOR WORK BY THE OWNER

The cost of The Work performed by the Owner in removing construction equipment, tools and supplies in accordance with Section 205.10 and in correcting deficiencies in accordance with Section 205.12 shall be paid by the Contractor.

209.12 PAYMENT FOR WORK BY THE OWNER FOLLOWING HIS TERMINATION OF THE CONTRACT

Upon termination of the Contract by the Owner in accordance with Section 205.13, no further payments shall be due the Contractor until The Work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the work including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the work shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Owner and approved by the Engineer.

209.13 PAYMENT FOR SAMPLES AND TESTING OF MATERIALS

Samples furnished in accordance with Section 204.08 shall be furnished by the Contractor at his expense.

Testing of samples and materials furnished in accordance with Section 204.08 shall be arranged and paid for by the Owner. Contractor shall assist as required, in the performance of tests.

Re-testing required by the failure of the original tests not meeting the Specifications will be paid for by the Contractor.

209.14 RELEASE OF LIENS

The Contractor shall deliver to the Owner a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner such amounts as the Owner may have been compelled to pay in discharging such liens including all costs and a reasonable attorney's fee.

209.15 ACCEPTANCE AND FINAL PAYMENT

When the Contractor shall have completed The Work in accordance with the terms of the Contract Documents, the Engineer shall certify his acceptance to the Owner and his approval of the Contractor's final Request for Payment, which shall be the Contract Amount plus all approved additions less all approved deductions and less previous payments made. The Contractor shall furnish evidence that he has fully paid all debts for labor, materials and equipment incurred in connection with The Work, following which the Owner shall accept The Work and release the Contractor except as to the conditions of the Performance Bond, any legal rights of the Owner, required guarantees, and Correction of Faulty Work after Final Payment, and shall authorize payment of the

Contractor's final Request for Payment. The Contractor must allow sufficient time between the time of completion of The Work and approval of the final Request for Payment for the Engineer to assemble and check the necessary data.

209.16 TERMINATION OF CONTRACT

The Contract will be considered fulfilled, save as provided in any Bond or Bonds or by law, when all The Work has been completed, the final inspection made by the Engineer, and final acceptance and Final Payment have been made by the Owner.

209.17 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

The approval of the final Request for Payment by the Engineer and the making of the Final Payment by the Owner to the Contractor shall not relieve the Contractor of responsibility for faulty materials or workmanship. The Owner shall promptly give notice of faulty materials or workmanship and the Contractor shall promptly replace any such defects discovered within one year from the date of written acceptance of The Work. The Engineer shall decide all questions arising under this paragraph.

SECTION 210 - INTENTION OF CONTRACTING PARTIES

The Contract, and all Documents incorporated therein by reference or executed in connection therewith, are intended solely to govern the relationship between the Contractor and Owner and their mutual obligations in respect to the subject of the Contract. To that end, no provision of the Contract or of any such Documents above mentioned shall be interpreted or given legal effect to create an obligation on the part of the Owner to third persons, including by way of illustration but not of exclusion, Sureties upon Performance Bonds, Payment Bonds or other Bonds, assignees of the Contractor, subcontractors, and persons performing labor, furnishing material or in any other way contributing to or assisting in the performance of the obligations of the Contractor; nor, shall any such provision be interpreted or given legal effect to afford a defense against any obligation owed or assumed by such third person to the Owner, or in any way to restrict the freedom of the Owner to exercise full discretion in its dealing with the Contractor.

END OF DIVISION

IMPORTANT

TO COMPLY WITH TITLE 74, SEC. 3109, YOU MUST COMPLETE THIS AFFIDAVIT AND RETURN IT
TO OUR FINANCE DEPARTMENT BEFORE PAYMENT CAN BE MADE

VENDOR'S NAME
& ADDRESS:

MAIL TO:

CITY OF SAPULPA

425 East Dewey Avenue

Sapulpa, Oklahoma 74066

AFFIDAVIT OF CLAIMANT

STATE OF)
COUNTY OF) SS.

The undersigned (Architect, Engineer, Contractor, Supplier) of lawful age, being first duly sworn, on oath says that this invoice or claim is true and correct. Affiant further states that the (work, services, or materials) as shown by this invoice or claim have been (completed or performed) in accordance with the plans, specifications, orders, or requests, furnished the affiant. Affiant further states that (s)he has made no payment directly or indirectly to any elected official, officer, or employee of the State of Oklahoma, any county or local subdivision of the state, of money or any other thing of value to obtain payment of the invoice or procure the contract or purchase order pursuant to which an invoice is required.

Engineer, Contractor, or Supplier

Subscribed and sworn before me the _____ day of _____, 202__.

Notary Public (or Clerk or Judge)

Architect

My commission expires _____, 202__.

NOTE: 62 O.S. 1993, ss310.9B, authorizes any municipality executing more than one contract, exceeding \$ 1,000 during the fiscal year, with an Architect, Engineer, Contractor, or Supplier to accept one affidavit applying to all work, services, or materials completed or supplied under the terms of awarded contracts, or which are needed on a continual basis; such affidavit to be in lieu of all individual affidavits for each invoice submitted in relation to such contract.

Invoice Number of Description	Date	Amount

NOTE: THIS AFFIDAVIT MUST BE RETURNED TO ABOVE ADDRESS.

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DIVISION 7:

07900	Sealants
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PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Provide and pay for field engineering services required for project.
 - 1. Survey work required in execution of project.
 - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
 - 3. Record drawings.
- B. Owner's Representative will identify existing control points indicated on the drawings as required.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered land surveyor, acceptable to Contractor and Owner.
- B. Registered professional engineer in the State of Oklahoma, of the discipline required for the specific service required.

1.03 SURVEY REFERENCE POINTS

- A. Existing basic horizontal and vertical control points for the project are those designated on drawings.
- B. Locate and protect control points prior to starting site work and preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice to Owner.
 - 2. Report to Owner's Representative when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.

1.04 PROJECT SURVEY REQUIREMENTS

- A. Establish a minimum of one permanent bench mark on each site, referenced to data established by survey control points.
 - 1. Record locations with horizontal and vertical data on project record documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means.
 - 1. Site improvements:

- a. Stakes for grading, fill and topsoil placement.
 - b. Utility slopes for invert elevations.
 - 2. Batter boards for structures.
 - 3. Building foundation, column locations and floor levels.
 - 4. Controlling lines and levels required for Divisions 15 and 16.
- C. From time to time, verify layouts by same methods.

1.05 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

1.06 SUBMITTALS

- A. Submit name and address of surveyor and professional engineer to Owner's Representative.
- B. Submit certificates signed by registered surveyor certifying that elevations and locations of improvements are in conformance or non-conformance with contract documents.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Comply with procedures described in this Section when applying for progress payment and final payment under the Contract.
- B. Related work:
 - 1. Proposal and contract documents.

1.02 QUALITY ASSURANCE

- A. Prior to start of construction, secure the Owner's Representative's approval of the schedule of values required to be submitted.
- B. During progress of the work, modify the schedule of values as approved by the Owner's Representative to reflect changes in the contract sum due to change orders or other modifications of the Contract.
- C. Base requests for payment on the approved schedule of values.

1.03 SUBMITTALS

- A. Informal submittal: If directed by the Owner's Representative:
 - 1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of AIA Document G702, "Application and Certificate for Payment", plus continuation sheet or sheets or other form as approved by the Owner.
 - 2. Make this preliminary submittal to the Owner's Representative at the last regular job meeting of each month.
 - 3. Revise the informal submittal of request for payment as agreed at the job meeting, initialing all copies.
- B. Formal submittal: Unless otherwise directed by the Owner's Representative:
 - 1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or neat lettering in ink, on AIA Document G702, "Application and Certificate for Payment", plus continuation sheet or sheets, or other form as approved by Owner.
 - 2. Sign and notarize the Application and Certificate for Payment and the City "Uniform Voucher and Invoice for Construction Services".
 - 3. Submit the original of the Application and Certificate of Payment plus three (3) identical copies of the continuation sheet or sheets to the Owner's Representative.
 - 4. The Owner's Representative will compare the formal submittal with the

approved informal submittal and, when approved, will sign the Application and Certificate for Payment, make the required copies and distribute:

- a. One original and two copies to Owner;
- b. One copy to Owner's Representative.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: To enable orderly review during progress of the work and to provide for systematic discussion of problems, the Owner's Representative will conduct project meetings throughout the construction period.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, Proposal and Contract Documents and Sections in Division 1 of these Specifications.
 - 2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are not the Owner's Representative responsibility and normally are not part of project meetings content.

1.02 QUALITY ASSURANCE

- A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.03 SUBMITTALS

- A. Job notes:
 - 1. The Owner's Representative will compile job notes of each project meeting and will furnish copies to the Contractor and to the Owner.
 - 2. Recipients of copies may make and distribute such other copies as they wish.

PART 2 - PRODUCTS

No products are required in this Section.

PART 3 - EXECUTION

3.01 MEETING SCHEDULE

- A. Except as noted below for Pre-construction Meeting, project meetings will be held weekly.
- B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.02 MEETING LOCATION

- A. The Owner's Representative will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

3.03 PRECONSTRUCTION MEETING

- A. A Pre-construction meeting will be scheduled after issuing the Notice to Proceed.
 - 1. Provide attendance by authorized representatives of the Contractor and major subcontractors.
 - 2. The Owner will advise other interested parties, including the Owner's Representative, and request their attendance.
- B. Minimum agenda: Data will be distributed and discussed on at least the following items.
 - 1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers and Owner's Representative.
 - 2. Channels and procedures for communication.
 - 3. Construction schedule, including sequence of critical work and closing of any facilities.
 - 4. Contract documents, including distribution of required copies of original documents and revisions.
 - 5. Processing of shop drawings and other data submitted to Owner's Representative for review.
 - 6. Rules and regulations governing performance of the work.
 - 7. Procedures for safety and first aid, security, quality control, housekeeping and related matters.
 - 8. Location of underground utilities.
 - 9. Notification procedures for adjacent property owners.

3.04 PROJECT MEETINGS

- A. Attendance:
 - 1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the work.
 - 2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the work is involved.
- B. Minimum agenda:
 - 1. Review, revise and approve job notes of previous meetings.
 - 2. Review progress of the work since last meeting, including status of submittals for approval.
 - 3. Identify problems which impede planned progress.
 - 4. Develop corrective measures and procedures to regain planned schedule.
 - 5. Complete other current business.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures:
 - 1. Wherever possible throughout the Contract Documents the minimum acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
 - 2. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the Owner's Representative and Owner.
 - 3. Make all submittals required by the Contract Documents and revise and resubmit as necessary to establish compliance with the specified requirements.
- B. Construction progress schedules.
- C. Schedule of values.
- D. Shop drawings, product data and samples.
- E. Manufacturer's instructions and certificates.
- F. Submittal log.

1.02 RELATED REQUIREMENTS

- A. Individual requirements for submittals are described in pertinent sections of these Specifications.
- B. Related work:
 - Section 01410: Testing Laboratory Reports.
 - Section 01700: Contract Closeout: Project Record Documents, Operating and Maintenance Data, Warranties and Bonds.

1.03 QUALITY ASSURANCE/CONTRACTOR RESPONSIBILITIES

- A. Coordination of submittals: Before each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item, and the submittal for it, conforms in all respects with the requirements of the Contract Documents. Coordinate with other trades as required. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

- B. Grouping of submittals: Unless otherwise specified, make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the Contract Documents and the Contractor shall be strictly liable for all delays so occasioned.
- C. Timing: Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing deliveries.
- D. Notify Owner's Representative in writing with submittal of any deviations in submittals from Contract Document requirements.
- E. Do no fabrication or work which requires submittals until accepted by the Owner's Representative.

1.04 SUBMITTAL SCHEDULE

- A. Compile a complete and comprehensive schedule of all submittals anticipated to be made during progress of the work. Include a list of each type of item for which Contractor's drawings, shop drawings, certificates of compliance, material samples, guarantees or other types of submittals are required. Adhere to the schedule except when specifically otherwise permitted. Submittal log is for Owner's Representative and Owner to track review.
- B. Coordinate the schedule with all necessary subcontractors and materials suppliers to ensure their ability to adhere. Coordinate as required to ensure the grouping of submittals.
- C. Revise and update the schedule on a monthly basis to reflect conditions and sequences. Promptly submit revised schedules to Owner's Representative for review and comment.

1.05 SCHEDULE OF VALUES

- A. Refer to Section 01370: Schedule of Values.

1.06 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- A. Shop Drawings:
 - 1. Present in clear and thorough manner, with details referenced to sheet, detail, schedule or room numbers shown on Contract Drawings. Provide quantity directed by Owner's Representative.

- B. Product Data:
1. Preparation: Clearly mark each copy to identify pertinent products or models. Show performance characteristics and capacities, dimensions and clearances required, and wiring or piping diagrams and controls.
 2. Modify manufacturer's standard drawings, diagrams and literature to delete information not applicable to work and supplement information specifically applicable to the work.
- C. Samples:
1. Office samples: Provide in quantity and size directed, complete with integrally related parts and attachment devices and illustrating functional characteristics of product and full range of color, texture and pattern.
 2. Field samples/mock-ups: Erect at project site at location acceptable to Owner's Representative in size or area specified in other specification sections. Fabricate to be complete and finished. Remove at conclusion of work or when directed.
- D. Make submittals promptly and in such sequence as to cause no delay in work.
- E. Submission Requirements:
1. Quantity required:
 - a. Shop drawings: One (1) unfolded reproducible transparency and four (4) opaque reproductions.
 - b. Submit five (5) index brochures of mechanical and electrical submittals (manufacturer's literature and drawings) for final approval and distribution.
 - c. Product data: Submit five (5) copies each. Complete catalogs will not be acceptable. Manufacturer's regular catalog sheets will be acceptable if they indicate completely all specification requirements. When manufacturer's catalog sheets are submitted, material not directly connected with subject shall be completely lined out. Where drawings cover several sizes or types of construction they shall clearly indicate size or type of construction to be used including a schedule identifying each piece of equipment. Sheets of submittals containing more than five different items of equipment shall be assembled in an index brochure.
 2. Submittal contents:
 - a. Submission date and dates of any previous submissions.
 - b. Project title and number.
 - c. Names of Contractor, supplier and manufacturer.
 - d. Identification of product, with specification section number.
 - e. Field dimensions, clearly identified as such.
 - f. Applicable standards, such as ASTM, Federal Spec numbers, etc.
 - g. Relation to adjacent or critical features of work or materials.
 - h. Identification of deviations from Contract Documents.
 - i. Identification of revisions on resubmittals.

- j. Contractor certification of submittal review, to include product verification, field measurements, quantities, coordination with adjacent equipment structural members, or architectural features, and coordination of information within submittal with requirements of work and Contract Documents. Certification may be by stamp of approval or a letter of transmittal containing a statement to the effect that they have been reviewed. Uncertified submittals will be rejected.
- F. Resubmission Requirements:
- 1. Make corrections or changes required by Owner's Representative and resubmit until accepted.
 - 2. Shop drawings and product data: Revise and resubmit as specified for initial submittal; indicate any changes which have been made other than those requested by Owner's Representative.
 - 3. Samples: Submit new samples as required for initial submittal.
 - 4. Resubmission of structural shop drawings and product data: Resubmit finalized drawings and product data. File copy to Owner's Representative and Owner; field copy to field office. Resubmit all subsequent changes with changes and dates noted.
- G. Distribution:
- 1. Distribute reproductions of shop drawings and product data which carry Owner's Representative and Owner's stamp of approval to job site and record documents file, other affected contractors, subcontractors and supplier or fabricator.
 - 2. Distribute samples with Owner's Representative and Owner's stamp of approval as directed by Owner's Representative.

1.07 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Submit in accordance with Section 01350: Substitutions.

1.08 MANUFACTURER'S CERTIFICATES

- A. Submit certificates in accordance with requirements of each specification section.

1.09 PROJECT RECORD DOCUMENTS

- A. Submit in accordance with Section 01720 Project Record Documents.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

- A. Deliver submittals to Owner's Representative.
- B. Transmit each item under Contractor's Standard Letter of Transmittal. Identify project, contractor, subcontractor, major supplier, pertinent drawing sheet and detail number and specification section number as appropriate. Identify deviations from Contract Documents.
- C. Submit initial progress and submittal schedules within 15 days after execution of Contract and schedule of values with first application for payment. Update with each Application for Payment reflecting changes since previous submittal.
- D. Comply with progress schedule for submittals related to work progress.
- E. After Owner's Representation and Owner's review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- F. Distribute copies of review submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

3.02 OWNER'S REPRESENTATIVE REVIEW

- A. Owner's Representative duties:
 - 1. Review submittals with reasonable promptness.
 - 2. Affix stamp and initials or signature and indicate resubmittal requirements or approval of submittal.
 - 3. Submit to Owner for approval.
 - 4. Return submittals to Contractor for distribution or for resubmission.
- B. Review by the Owner's Representative shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the Contractor from responsibility for errors which may exist.
- C. Authority to Proceed: The notations "Approved" or "Approved as Corrected" authorizes the Contractor to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, required by the Owner's Representative review comments.
- D. Revisions: Make only those revisions directed or approved by the Owner's Representative and Owner.
- E. Revisions after approval: When a submittal has been reviewed by the Owner, resubmittal for substitution of materials or equipment will not be considered

unless accompanied by an acceptable explanation as to why the substitution is necessary.

END OF SECTION

PART 1 - GENERAL

1.01 DISTRIBUTION

- A. Work included: Provide pre-construction photographs taken at the job site prior to commencement of work.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limit to, Proposal and Contract Documents and Sections in division 1 of these Specifications.
 - 2. Section 01510: Site Access.

1.02 QUALITY ASSURANCE

- A. Digital camera or equal.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Except as otherwise directed and paid for, submit one print of each photograph.

PART 2 - PRODUCTS

2.01 PRE-CONSTRUCTION PHOTOGRAPHS

- A. Provide color prints:
 - 1. Size: 3" x 5" prints.
- B. On the back of each print, in a manner not damaging to the print, show:
 - 1. Job name.
 - 2. Location from which photographed.
 - 3. Date of photograph.
- C. Retain the images for at least two years following date of substantial completion.
- D. Do not permit prints to be issued for any other purpose without specific written approval from the Owner.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION PHOTOGRAPHY

- A. Except as otherwise specifically approved by the Owner's Representative make the photographs prior to the commencement of work.
- B. Any existing damage on the site to work that is scheduled to remain shall be documented or it will be the contractor's responsibility to repair the work in question.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide temporary facilities and controls needed for the work including, but necessarily limited to:
 - 1. Temporary utilities such as heat, water, electricity and telephone;
 - 2. Field office for Contractor's personnel;
 - 3. Sanitary facilities;
 - 4. Enclosures such as tarpaulins, barricades and canopies;
 - 5. Temporary fencing of the construction site;
 - 6. Project sign.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, Proposal and Contract Documents and Sections in Division 1 of these Specifications.
 - 2. Except that equipment furnished by Subcontractors shall comply with requirements pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the work are not part of this Section.
 - 3. Permanent installation and hookup of the various utility lines shall be in accordance with local building codes.

1.02 PRODUCT HANDLING

- A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

PART 2 - PRODUCTS

2.01 UTILITIES

- A. Water:
 - 1. Provide as necessary temporary piping and water supply and, upon completion of the work, remove such temporary facilities.
- B. Electricity:
 - 1. Provide necessary temporary wiring and, upon completion of the work, remove such temporary facility.
 - 2. Provide and pay for electricity used in construction.
- C. Heating: Provide and maintain heat necessary for proper conduct of operations needed in the work.

- D. Telephone and Fax:
 - 1. Contractor and superintendent to have cellular telephones accessible during normal business hours.
 - 2. Contractor to maintain telephone and fax service at the Contractor's primary office to receive job correspondence. On-site fax not required.

2.02 FIELD OFFICES AND SHEDS

- A. Contractor's facilities:
 - 1. Contractor shall provide a field office building and sheds adequate in size and accommodation for Contractor's offices, supply and storage.
 - 2. Within the Contractor's facilities, provide enclosed space, for holding project meetings. Furnish with table, chairs and utilities.
- B. Sanitary facilities:
 - 1. Provide temporary sanitary facilities in the quantity required for use by all personnel.
 - 2. Maintain in a sanitary condition at all times.

2.03 ENCLOSURES

- A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges and other temporary construction necessary for proper completion of the work in compliance with pertinent safety and other regulations.

2.04 TEMPORARY FENCING

- A. Provide and maintain for the duration of construction a temporary safety barricade of design and type needed to prevent entry onto the work by the public.

PART 3 - EXECUTION

3.01 MAINTENANCE AND REMOVAL

- A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work.
- B. Remove such temporary facilities and controls as rapidly as progress of the work will permit, or as directed by the Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS

- A. Work included: this information applies to situations in which a Contractor or his representatives including, but not limited to, suppliers, subcontractors, employees and field engineers enter upon The Project property.
- B. Related work:
 - Section 02000: Site Work.
 - Section 02070: Selective Demolition.
 - Section 02100: Site Preparation.
 - Section 02220: Excavating, Backfilling & Compacting.

1.02 QUALITY ASSURANCE

- A. Upon approval by Owner for access, notify all pertinent personnel regarding requirements of this information.
- B. Require that all personnel who will enter upon property certify their awareness of and familiarity with the requirements of the Owner.
- C. Tree protection in accordance with Section 02100.

1.03 SUBMITTALS

- A. Maintain an accurate record of the names and identification of all persons entering upon Park property and permit periodic review of record by Owner and/or Owner's Representative.
- B. Pre-construction photographs per Paragraph 1.07.

1.04 TRANSPORTATION FACILITIES

- A. Vehicle and equipment access:
 - 1. Provide protection for curbs, sidewalks, roads, parking, utilities and amenities over which trucks and equipment pass to reach work areas.

Contractor's vehicles:

Limit the access of vehicles belonging to employees and all other vehicles entering upon Park property to use only approved access routes.

Do not permit vehicles to park on any area of the property designated not to be disturbed.

1.05 NOTIFICATION BY CONTRACTOR

- A. The Contractor shall notify the Owner, in writing, two weeks in advance of any proposed construction activity on Owner's property. Said notice does not constitute authority to proceed with work in the Park. Official notice of approval will be at the discretion of the Owner.

1.06 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

- A. The Contractor shall be responsible for the preservation of all property and shall protect carefully from disturbance or damage all said property witnessed or otherwise referenced their location and shall not move any item until directed.
- B. The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials.
- C. The Contractor shall consult with the Owner regarding his work activities and shall install any and all barriers, warning signs, fencing, property protection, access control or other devices to the satisfaction of the Owner and needed to provide for public safety and protection of Property.
- D. When or where any direct or indirect damage or injury is done to property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed by the Owner or he shall make good such damage or injury in an acceptable manner to the Owner.
- E. Tree protection in accordance with Section 02100.

1.07 PRE-CONSTRUCTION PHOTOGRAPHS OR VIDEO

- A. The Contractor shall provide digital photographs of the specified work area one day prior to any work starting, but after appropriate construction staking and protection.
- B. Photographs shall be 3" x 5" color prints with information on the back of each print as follows: Show the job name, location of photograph, date of photograph and photographer's name, address and photograph number.
- C. Photographs shall be from a minimum of twenty-four (24) diversified overall views of the work area and of any pertinent Park property within construction limits. Additional photos may be required in unusual or extremely large sites.

- D. Each photograph shall be clear, in focus, with high resolution and sharpness and with minimum distortion.

1.08 CLEANING

- A. Progress cleaning:
 - 1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, packaging and shipping material. Remove such items from premises weekly.
 - 2. Weekly, and more often if necessary, inspect all materials stored on site, re-stack, tidy, or otherwise arrange in safe condition.
- B. Final cleaning:
 - 1. Completely remove resultant construction debris, particularly any loose rock or stone imported or uncovered during construction.
 - 2. Broom clean paved areas on site.
 - 3. Mow grass areas as directed which had not been under normal maintenance.
 - 4. Repair any areas of turfing that have been damaged by construction operations in accordance with Section 02935 Sodding.
 - 5. Alleviate compacted turf areas if access has been over turf, but no turf has to be placed. Compaction should be alleviated by a coring implement with 6" O.C. minimum coverage of 3" deep. Drag cores until leveled.
 - 6. Often when fences are erected for protection, holes are left when fence posts are pulled. Holes should be filled with appropriate top soil and settled with water to grade.

1.09 RECORD DOCUMENTS

- A. Submit to Owner a complete record drawing clearly indicating all work both concealed and visible.
- B. Information shall be tied to base line control data of the Owner and so noted on the Owner's field books.

1.10 FINAL APPROVAL

- A. Upon the completion of all work a final inspection must be made by the Owner to determine whether the work has been completed in accordance with the contract, plans and/or specifications.
- B. When the work has been so completed the Owner will provide certification of same and forward to appropriate contracting authorities.

- C. Acceptance by Owner shall not restrict or prohibit the rights provided for in regard to latent defects, frauds or such gross mistakes as may amount to fraud or as regards the rights under any warranty guarantee.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide an orderly and efficient transfer of the completed work to the Owner.
- B. Related work:
 - 1. Proposal and contract documents.

1.02 QUALITY ASSURANCE

- A. Prior to requesting inspection by the Owner's Representative, use adequate means to assure that the work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.03 PROCEDURES

- A. Substantial Completion:
 - 1. Contractor:
 - a. Submit written certification through Owner's Representative to the Owner that project is substantially complete in accordance with the construction contract.
 - b. Submit list of major items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the contractor to complete all work in accordance with the contract documents.
 - 2. Owner's Representative will make an inspection within seven (7) days after receipt of certification together with the Owner.
 - 3. Should Owner's Representative consider that work is substantially complete in accordance with the construction contract:
 - a. Contractor shall prepare a punch list of items to be completed or corrected as determined by the inspection.
 - b. The Owner will prepare a Certificate of Substantial Completion for the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate. The Certificate of Substantial Completion shall contain the following:
 - (1) Date of Substantial Completion;
 - (2) Punch list of items to be completed or corrected.
 - (3) The time within which Contractor shall complete or correct work of listed items.
 - (4) Date and time Owner will assume possession of work or designated portion thereof.
 - c. Contractor shall:

- (1) Complete work listed for completion or correction within the designated time.
 - (2) Refer to Construction Contract for post substantial completion requirements.
 4. Should Owner's Representative consider that work is not substantially completed:
 - a. He shall immediately notify Contractor in writing stating reasons.
 - b. Contractor: Complete work and send second written notice through Owner's Representative to Owner certifying that the project is substantially complete.
 - c. Owner's Representative will re-inspect work.
- B. Final Completion:
 1. Contractor shall submit written certification that:
 - a. Contract documents have been reviewed;
 - b. Project has been inspected for compliance with contract documents.
 - c. Work has been completed in accordance with the construction contract.
 - d. Equipment and systems have been tested in presence of Owner and are operational.
 - (1) Equipment and systems shall be operated in a normal mode for a minimum period of three (3) weeks prior to final inspection.
 - e. Owner's personnel have been instructed in operation of all systems, mechanical, electrical and other equipment.
 - f. Project is completed, ready for final inspection.
 2. Owner's Representative will make final inspection within seven (7) days after receipt of certification.
 3. Should Owner's Representative consider that work is finally complete in accordance with contract documents, contractor shall submit final Application for Payment.
 4. Should Owner's Representative consider that work is not finally complete:
 - a. He shall notify contractor, in writing, stating reasons.
 - b. Contractor shall take immediate steps to remedy the stated deficiencies and send second written notice through Owner's Representative to Owner certifying that work is complete.
 - c. Owner's Representative will re-inspect work.

1.04 REINSPECTION COSTS

- A. Should Owner's Representative be required to perform more than two (2) inspections for project substantial completion and project final completion, respectively because of failure of work to comply with original certifications of contractor, the contractor will compensate Owner's Representative for additional services to include time and reimbursable expenses incurred by the Owner's Representative and his consultants. This amount will be deducted from final payment to the Contractor.

1.05 RETURN OF CONTRACT DOCUMENTS

- A. Return of Drawings: Drawings, details, sketches and specifications are property of Owner, and are issued to contractor as instruments of service only. If required, contractor shall return same to Owner.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included:
 - 1. Throughout progress of the work, maintain an accurate record of changes in the Contract Documents as described in Article 3.01 below.
 - 2. Upon completion of the work, transfer the recorded changes to a set of Record Documents, as described in Article 3.02 below.
- B. Related work:
 - 1. Proposal and contract documents.
 - 2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Owner's Representative.
- B. Accuracy of records:
 - 1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
 - 2. Accuracy of records shall be such that future search for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.
- C. Make entries within 24 hours after receipt of information that the change has occurred.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. The Owner's Representative's approval of the current status of Project Record Documents may be a prerequisite to the Owner's Representative approval of requests for progress payment and request for final payment under the Contract.
- C. Prior to submitting each request for progress payment, secure the Owner's Representative's approval of the current status of the Project Record Documents.
- D. Prior to submitting request for final payment, submit the final Project Record Documents to the Owner's Representative and secure his approval.

1.04 PRODUCT HANDLING

- A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the work and transfer all recorded data to the final Project Record Documents.
- B. In the event of loss of recorded data, use means necessary to again secure the data to the Owner's Representative's approval.
 - 1. Such means shall include, if necessary in the opinion of the Owner's Representative, removal and replacement of concealing materials.
 - 2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.01 RECORD DOCUMENTS

- A. Job set: Promptly following receipt of the Owner Notice to Proceed, secure from the Owner's Representative at no charge to the Contractor one complete set of all Documents comprising the Contract.
- B. Final Record Documents: At a time nearing the completion of the work, secure from the Owner's Representative at no charge to the Contractor one complete set of all Drawings in the Contract.

PART 3 - EXECUTION

3.01 MAINTENANCE OF JOB SET

- A. Immediately upon receipt of the job set described in Paragraph 2.01 above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET."
- B. Preservation:
 - 1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Owner's Representative.
 - 2. Do not use the job set for any purpose except entry of new data and for review by the Owner's Representative until start of transfer of data to final Project Record Documents.
 - 3. Maintain the job set at the site of work as that site is designated by the Owner's Representative.
- C. Making entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
 2. Date all entries.
 3. Call attention to the entry by a "cloud" drawn around the area or areas affected.
 4. In the event of overlapping changes, use different colors for the overlapping changes.
- D. Make entries in the pertinent other Documents as approved by the Owner's Representative.
- E. Conversion of schematic layouts:
1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts and similar items is shown schematically and is not intended to portray precise physical layout.
 - a. Final physical arrangement is determined by the Contractor, subject to the Owner's Representative's approval.
 - b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.
 2. Show on the job set of Record Drawings, by dimension accurate to within one inch, the centerline of each run of items such as are described in subparagraph 3.01 E. 1. above.
 - a. Clearly identify the item by accurate note such as "cast iron drain", "galv. water" and the like.
 - b. Show, by symbol note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed" and the like).
 - c. Make all identification sufficiently descriptive that it may be related reliably to the Specifications.
 3. The Owner's Representative may, subject to Owner approval, waive the requirements for conversion of schematic layouts where, in the Owner's Representative's judgement, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Owner.

3.02 FINAL PROJECT RECORD DOCUMENTS

- A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the work, both concealed and visible, to enable future modification of the work to proceed without lengthy and expensive site measurement, investigation and examination.
- B. Approval of recorded data prior to transfer:
1. Following receipt of the transparencies described in Paragraph 2.01 B. above and prior to start of transfer of recorded data thereto, secure the Owner's Representative's approval of all recorded data.
 2. Make required revisions.

- C. Transfer of data to Drawings:
 - 1. Carefully transfer change data shown on the job set of Record Drawings to the corresponding transparencies, coordinating the changes as required.
 - 2. Clearly indicate at each affected detail and other Drawing a full description of changes made during construction, and the actual location of items described in subparagraph 3.01 E. 1. above.
 - 3. Call attention to each entry by drawing a "cloud" around the area or areas affected and mark set as "Record Document".
 - 4. Make changes neatly, consistently and with the proper media to assure longevity and clear reproduction.
 - 5. Provide one complete set of the record documents.
- D. Transfer of data to other Documents:
 - 1. If the Documents other than Drawings have been kept clean during progress of the work, and if entries thereon have been orderly to the approval of the Owner's Representative, the job set of those Documents other than Drawings will be accepted as final Record Documents.
 - 2. If any such Document is not so approved by the Owner's Representative, secure a new copy of that Document from the Owner's Representative at the Owner's Representative's usual charge for reproduction and handling and carefully transfer the change data to the new copy to the approval of the Owner's Representative.
- E. Review and submittal:
 - 1. Submit the completed set of Project Record Documents to the Owner's Representative as described in Paragraph 1.03 D. above.
 - 2. Participate in review meetings as required.
 - 3. Make required changes and promptly deliver the final Project Record Documents to the Owner's Representative.

3.03 CHANGES SUBSEQUENT TO ACCEPTANCE

- A. The Contractor has no responsibility for recording changes in the work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: To aid the continued instruction of operating and maintenance personnel and to provide a positive source of information regarding the products incorporated into the work, furnish and deliver the data described in this Section and in pertinent other Sections of these Specifications.
- B. Related work:
 - 1. Proposal and construction documents.
 - 2. Required contents of submittals also may be amplified in pertinent other Sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. In preparing data required by this Section, use only personnel who are thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with the requirements of this Section and skilled in technical writing to the extent needed for communicating the essential data.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Submit two copies of a preliminary draft of the proposed Manual or Manuals to the Owner's Representative for review and comments.
- C. Unless otherwise directed in other Section's, or in writing by the Owner's Representative, submit four copies of the final Manual to the Owner's Representative prior to indoctrination of operation and maintenance personnel.

PART 2 - PRODUCTS

2.01 INSTRUCTION MANUALS

- A. Where instruction Manuals are required to be submitted under other Sections of these Specifications, prepare in accordance with the provisions of this Section.
- B. Format:
 - 1. Size: 8-1/2" x 11".
 - 2. Paper: White bond, at least 20 lb. Wt.
 - 3. Text: Neatly printed.
 - 4. Drawings: 11' in height; bind in with text; foldout acceptable, not to exceed 11x17".

5. Flysheets: Separate each portion of the Manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets may be in color.
 6. Binding: Use heavy-duty plastic or fiberboard covers with binding mechanism concealed inside the Manual; 3-ring binders will be acceptable; all binding is subject to Owner's Representative's approval.
 7. Measurements: Provide all measurements in U.S. standard units such as feet and inches, lbs, and cfm.
- C. Provide front and back covers for each Manual, using durable material approved by the Owner's Representative and clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

Name and address of work
Name of Contractor
General Subject of this Manual

Owner's Representative

- D. Contents: Include at least the following:
1. Neatly typewritten index near the front of the Manual.
 2. For architectural products, applied materials and finishes:
 - a. Manufacturer's data, giving full information on finishes:
 - (1) Catalog number, size, composition.
 - (2) Color and texture designations.
 - (3) Information required for reordering special manufactured products.
 - b. Instructions for care and maintenance:
 - (1) Manufacturer's recommendations for types of cleaning agents and methods.
 - (2) Cautions against cleaning agents and method which are detrimental to product.
 - (3) Recommended schedule for cleaning and maintenance.
 - c. All approved submittals.
 3. For moisture protection and weather exposed products:
 - a. Manufacturer's data, giving full information on products.
 - (1) Applicable standards.
 - (2) Chemical composition.
 - (3) Details of installation.
 - b. Instructions for inspection, maintenance and repair.
 - c. All approved submittals.
 4. For each electric and electronic system and mechanical system as appropriate:

- a. Description of system and component parts. Function, normal operating characteristics and limiting conditions. Complete nomenclature and commercial number of replaceable parts.
- b. Circuit directories of panel boards: Electrical service, controls and communications.
- c. Operating procedures: Routine and normal operating instructions, sequences required and special operating instructions.
- d. Maintenance procedures: Routine operations, guide to "trouble-shooting", disassembly, repair and re-assembly and adjustment and checking.
- e. Manufacturer's printed operating and maintenance instructions.
- f. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
- g. Other data as required under pertinent sections of specifications.
- h. All approved submittals.
5. Certificate of substantial completion.
6. Master list of extended warranty items.

PART 3 - EXECUTION

3.01 INSTRUCTION MANUALS

- A. Preliminary:
 1. Prepare a preliminary draft of each proposed Manual.
 2. Show general arrangement, nature of contents in each portion, probable number of drawings and their size, and proposed method of binding and covering.
 3. Secure the Owner's Representative's approval prior to proceeding.
- B. Final:
 1. Complete the Manuals in strict accordance with the approved preliminary drafts and the Owner's Representative's review comments.
- C. Revisions:
 1. Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. These general site work requirements apply to all site work operations. Refer to Division 2 specification sections for specific general, product and execution requirements.
- B. Related work:
 - Section 01510: Site Access.
 - Section 02070: Selective Demolition.
 - Section 02100: Site Preparation.
 - Section 02220: Excavating, Backfilling and Compacting.

1.02 QUALITY ASSURANCE

- A. Comply with all applicable local, state and federal requirements regarding materials, methods of work and disposal of excess and waste materials.

1.03 PROJECT CONDITIONS

- A. Locate and identify existing underground and overhead services and utilities within contract limit work areas. Provide adequate means of protection of utilities and services designated to remain. Repair utilities damaged during site work operations at Contractor's expense.
- B. Arrange for disconnection, disconnect and seal or cap all utilities and services designated to be removed before start of site work operations. Perform all work in accordance with the requirements of the applicable utility company or agency involved.
- C. When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation. If the services are Owner maintained, notify Owner's Representative immediately.
- D. Locate, protect and maintain bench marks, monuments, control points and project engineering reference points. Re-establish disturbed or destroyed items at Contractor's expense.
- E. Perform site work operations and the removal of debris and waste materials to assure minimum interference with streets, walks and other adjacent facilities.

- F. Give the owner 24 hour advanced notice to close or obstruct street, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways.
- G. Control dust caused by the work. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.
- H. Protect existing buildings, paving and other services or facilities on site and adjacent to the site from damage caused by site work operations. Cost of repair and restoration of damaged items at Contractor's expense.
- I. Protect and maintain street lights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal. Remove or coordinate the removal of traffic signs, parking meters and postal mail boxes with the applicable governmental agency. Provide for temporary relocation when required to maintain facilities and services in operation during construction work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine the areas and conditions under which site work is performed. Do not proceed with the work until unsatisfactory conditions are corrected.
- B. Consult the records and drawings of adjacent work and of existing services and utilities which may affect site work operations.

END OF SECTION

**SECTION 02070
SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Carefully demolish and remove from the site those items scheduled to be demolished and removed.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to Proposal and Contract Documents and Sections in Division 1 of these Specifications.
 - 2. Section 01510: Site Access.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. By careful study of the Contract Documents, determine the location and extent of selective demolition to be performed.
- B. Visit the site and verify the extent and location of selective demolition required.
 - 1. Carefully identify limits of selective demolition.
 - 2. Mark interface surfaces as required to enable workmen also to identify items to be removed and items to be left in place intact.
- C. Prepare and follow an organized plan for demolition and removal of items.
 - 1. Shut off, cap and otherwise protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction.
 - 2. Completely remove items scheduled to be so demolished and removed, leaving surfaces clean, solid and ready to receive new materials specified elsewhere.

- 3. In all activities, comply with pertinent regulations of governmental agencies having jurisdiction.
- D. Demolished material shall be considered to be property of the Contractor and shall be completely removed from the job site unless otherwise specified.
- E. Use means necessary to prevent dust becoming a nuisance to the public, to neighborhoods and to other work being performed on or near the site.

3.02 REPLACEMENTS

- A. In the event of demolition of items not so scheduled to be demolished, promptly replace such items to the approval of the Owner at no additional cost to the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Perform site preparation work as shown and specified. The work includes:
 - 1. Protecting existing trees to remain.
 - 2. Removing trees and other vegetation.
 - 3. Removing designated site improvements.
- B. Related work:
Section 01510: Site Access.

1.02 QUALITY ASSURANCE

- A. Comply with Section 02000 Site Work requirements.
- B. Notify all contractor employees and subcontractors of provisions of this Section.
- C. Council of Tree and Landscape Appraisers

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials and equipment: As selected by the contractor except as noted.
- B. Tree protection:
 - 1. Wood fencing, snow fencing.

PART 3 - EXECUTION

3.01 TREE PROTECTION

- A. Protect existing trees scheduled to remain against injury or damage, including cutting, breaking or skinning of roots, trunks or branches; smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.
 - 1. Protect designated trees with temporary wood or vinyl snow fence enclosure. Provide a minimum 12'-0" radius from center of tree trunk. Increase enclosure size as directed for large trees up to and including the drip line.
 - 2. Erect temporary fencing before commencing site preparation work. Maintain fencing during full construction period. Remove temporary fencing when acceptable to Owner's Representative.

4. Repair trees scheduled to remain and damaged by construction operations in a manner acceptable to the Owner's Representative. Repair damaged trees promptly to prevent progressive deterioration caused by damage.
5. Replace trees scheduled to remain and damaged beyond repair by construction operations as determined by the Owner's Representative with trees of similar size and species of equal dollar value. Cost for tree replacement shall be determined in accordance with the "Guide for Establishing The Value of Trees and Other Plants", published by the Council of Tree and Landscape Appraisers.
6. Tree replacement as required by paragraph 5 shall be in accordance with Specification Section 02900 Planting.
7. Replacement of trees scheduled to remain and damaged by construction operations during construction operations, and securing an opinion as to the tree or plant's health and its value, shall be at contractor's expense.
8. Tree loss appraisal shall be in accordance with the "Guide for Establishing the Values of Trees and Other Plants", by the Council of Tree and Landscape Appraisers.

3.02 CLEARING

- A. Locate and suitably identify trees and improvements indicated to remain.
- B. Clear and grub areas within contract limits as required for site and execution of the work.
- C. Remove trees as designated on the plans with the approval of the Owner's Representative.

3.03 STRIPPING TOPSOIL

- A. Strip topsoil to a minimum depth of 6 inches in all areas to be re-graded, resurfaced or paved within contract limit work area. Additional topsoil can be stripped if need to achieve an adequate quantity for all lawn and planting areas.
- B. Stockpile topsoil in a location acceptable to the Owner's Representative for use in finish grading and preparation of lawns and planting beds.
 1. Grade and slope stockpiles for proper drainage and to prevent erosion.
 2. No topsoil shall be removed from the site.
- C. Protect all areas which are not to be resurfaced or re-graded and adjacent areas outside of the contract limits from damage due to site preparation work.

3.04 SITE IMPROVEMENTS

- A. Existing Utilities
 - 1. Information on the drawings relating to existing utility lines and services is from the best sources presently available. All such information is furnished only for information and is not guaranteed. Excavate test pits as required to determine exact locations of existing utilities.
 - 2. Call Okie for utility staking not City owned.
 - 3. Call Owner's Representative to coordinate City maintained utility staking.

3.05 DISPOSAL OF WASTE MATERIALS

- A. Stockpile, haul from site and legally dispose of waste materials and debris. Accumulation is not permitted.
- B. Maintain disposal routes clear, clean and free of debris.
- C. On-site burning of combustible cleared materials is allowed with proper permit and burn pit.

3.06 CLEANING

- A. Upon completion of site preparation work, clean area within contract limits, remove tools and equipment. Provide site clear, clean and free of materials and debris and suitable for site work operations.

END OF SECTION

SECTION 02211 ROUGH GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal and stockpiling of topsoil and subsoil.
- B. Cutting, grading, filling and rough contouring the site.

1.02 RELATED SECTIONS

- A. Section 01410 - Quality Control 01410 - Testing Laboratory Services: Testing fill compaction.
- B. Section 021010 - Site Preparation.
- C. Section 02220 - Excavating, Backfilling & Compaction.
- D. Section 02265 - Finish Grading: Finish grading with topsoil to contours.

1.03 REFERENCES

- A. Relations of soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12 inch Drop.
- B. ANSI/ASTM D 1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop.

1.04 QUALITY ASSURANCE

- A. Grading Contractor: A firm which has at least five (5) years of experience in work of the type and size required by this Section and which is acceptable to the Owner, Owner's Representative, and Landscape Architect.
- B. References: The Grading Contractor must supply three references for work of this type and size with their bid including names, phone numbers and email addresses of contact person(s).
- C. All grading work must be done utilizing an electronic, automatic laser grading system.

1.05 PROJECT RECORDS DOCUMENTS

- A. Submit under provisions of section 01700.
- B. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slopes gradients.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. Off-Site Fill: Off-site fill shall be material with plasticity index less than 18 and shall contain at least 15% fines (material passing #200 sieve.)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions and all underground and above ground utilities.
- B. Verify that survey benchmark and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- C. Notify utility company as necessary to remove and relocate utilities.
- D. Protect above and below grade utilities which are to remain.
- E. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.
- F. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

3.03 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Stockpile in area designated on site. Remove excess topsoil not being reused, from site.
- C. Do not excavate wet topsoil.
- D. Stockpile to depth not exceeding 8 feet. Cover to protect from erosion.

3.04 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Stockpile in area designated on site. Remove excess subsoil not being reused, from site.
- C. Do not excavate wet subsoil.
- D. Stockpile subsoil to depth not exceeding 8 feet. Cover to protect from erosion.
- E. When excavation through roots is necessary, perform work by hand and cut roots with sharp axe.

3.05 FILLING

- A. Fill areas to contours and elevations with unfrozen materials
- B. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent.
- C. Subsoil: Place and compact material in continuous layers not exceeding 9 inches compacted depth compacted to 95 percent.
- D. Top Soil: Place and compact material in a continuous layers not exceeding 8 inches compacted depth and do not exceed 85 percent compaction.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot.

3.07 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01410.
- B. Tests and analysis of fill materials will be performed in accordance with ANSI/ASTM D698 D1557 and with Section 01410.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D968 and with Section 01410.
- D. If test indicate Work does not meet specified requirements, remove work, replace and retest at no cost to owner.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Excavate, backfill, compact and grade the site to the elevations shown on the drawings as specified herein and as needed to meet the requirements of the construction shown in the Contract Documents.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, Proposal and Contract Documents and Sections in Division 1 of these Specifications.
 - 2. Section 01510: Site Access.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity and numbers to accomplish the work of this Section in a timely manner.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Fill and backfill materials:
 - 1. Provide soil materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension and with not more than 15% of the rocks or lumps larger than 2-1/2" in their greatest dimension.
 - 2. Fill material is subject to the approval of the Owner's Representative and is that material removed from excavations or imported from off-site borrow areas, predominantly granular, non-expansive soils free from roots and other deleterious matter.
 - 3. Do not permit rocks having a dimension greater than 1" in the upper 12" of fill or embankment.
 - 4. Where fill material is required to build up a building pad and/or under building slabs, provide select low PI material. Select fill material used should be free of organic or other deleterious matters, have a maximum particle size of three (3) inches, and have a liquid limit less than thirty-five (35) and a plasticity index between six (6) and twelve (12) and consist of sandy clays or clayey sands.

5. Where granular base is called for under building slabs, provide aggregate complying with requirements of Section 03300 of these Specifications.

2.02 TOPSOIL

- A. Where shown on the drawings or otherwise required, provide topsoil consisting of friable fertile soil of loamy character containing a minimum of 2% decayed organic matter (humus) normal to the region, capable of sustaining healthy plant life and reasonably free from subsoil, roots, heavy or stiff clay, stones larger than 1" in greatest dimension, noxious weeds, sticks, brush, litter and other deleterious matter.
- B. Obtain topsoil from sources within the project limits or provide imported topsoil obtained from sources outside the project limits or from both sources.

2.03 OTHER MATERIALS

- A. Provide other materials not specifically described but required for complete and proper installation as selected by the Contractor subject to the approval of the Owner's Representative.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Utilities: Refer to Section 2000 Site Work.
- B. Protection of persons and property:
 1. Barricade open holes and depressions occurring as part of the work and post warning lights on property adjacent to or with public access.
 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.
- C. De-watering:
 1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains and other approved methods.
 2. Keep excavations and site construction area free from water.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

3.02 EXCAVATING

- A. Perform unclassified excavating of every type of material encountered within the limits of the work to the lines, grades and elevations indicated and specified herein.
- B. Excavation of rock:
 - 1. Where rocks, boulders, or similar material is encountered and where such material cannot be removed or excavated by conventional earth moving or ripping equipment, take required steps to proceed with the general grading operations of the work and remove or excavate such material by means which will neither cause additional cost to the Owner nor endanger buildings or structures whether on or off the site.
 - 2. Do not use explosives without written permission from the Owner's Representative.
 - 3. The definition of "Rock Excavation" will apply as stated in the "Standard Specifications for Highway Construction", Oklahoma Department of Transportation, edition of 1988 or latest revision.
- C. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- D. Borrow:
 - 1. Obtain material required for fill or embankment in excess of that produced within the grading limits of the work from borrow areas selected and paid for by the Contractor and approved by the Owner's Representative.
 - 2. Grade borrow areas upon completion to provide complete surface drainage and to blend with surrounding contours.
 - 3. Contractor is required to excavate sufficient material to construct contours and features as per plans. Payment of all excavation will be paid as a lump sum.
- E. Surplus material:
 - 1. Owner's Representative will direct contractor in the placement of surplus excavated material.
 - 2. Surplus material will be used on the project or stored on site at a location approved by the Owner's Representative.
- F. Swales, ditches and gutters:
 - 1. Cut accurately to the cross sections, grades and elevations shown on the grading plans.
 - 2. Maintain excavations free from detrimental quantities of leaves, sticks, trash and other debris until completion of the work.
 - 3. Swales and ditches shall be smooth in nature to accommodate standard mowing practices and equipment.
- G. Unauthorized excavation:
 - 1. Unauthorized excavation consists of removal of materials beyond indicated sub-grade elevations or dimensions without specific instruction from the Owner's Representative.
 - 2. Under footings, foundations or retaining walls:

- a. Fill unauthorized excavations by extending the indicated bottom elevation of the footing or base to the excavation bottom without altering the required top elevation.
 - b. When acceptable to the Owner's Representative, lean concrete fill may be used to bring the bottom elevation to proper position.
 3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the Owner's Representative.
- H. Stability of excavations:
 1. Slope sides of excavations to 1:1 or flatter, unless otherwise directed by the Owner's Representative.
 2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
 3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- I. Excavating for structures:
 1. Conform to elevations and dimensions shown within a tolerance of 0.10 ft and extending a sufficient distance from footings and foundations to permit placing and removing concrete formwork, installation of services, other construction required and for inspection.
 2. In excavating for footings and foundations, take care not to disturb bottom of excavation:
 - a. Excavate by hand tools to final grade just before concrete is placed.
 - b. Trim bottoms to required lines and grades to leave solid base to receive concrete.
 3. Excavate for footings and foundations only after general site excavating, filling and grading are complete.
- J. Cold weather protection:
 1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.
- K. Excavating for detention ponds:
 1. The exposed sub-grade of pond areas shall be scarified to a minimum depth of 8 inches. Before compaction, the scarified soils shall be adjusted to within a moisture content range of plus or minus 2 percent of optimum moisture content.

3.03 FILLING AND BACKFILLING

- A. General:

1. For each classification listed below, place acceptable soil material in layers to required sub-grade elevations.
 2. In excavations:
 - a. Use satisfactory excavated or borrow material.
 3. Building pads and/or under building slabs:
 - a. Provide Select low PI material to build up building pad and slab to elevations called out on the drawings. If the material on site is not suitable, the select material will need to be imported from off site.
 - b. Use granular fill, if so called for on the drawings or soils report, complying with aggregate acceptable under Section 03300 of these Specifications.
- B. Ground surface preparation:
1. Remove vegetation, debris, unsatisfactory soil materials, obstructions and deleterious matter from ground surface prior to placement of fills.
 2. Plow, strip or break up sloped surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.
 3. When existing ground surface has a density less than that specified under “compacting” for the particular area, break up the ground surface, pulverize, moisture-condition to the optimum moisture content and compact to required depth and percentage of maximum density.
- C. Placing and compacting:
1. Place backfill and fill materials in layers not more than 8” in loose depth.
 2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
 3. Compact each layer to required percentage of maximum density for area. Compact per paragraph 3.05 A., B. and C. this Section.
 4. Do not place backfill or fill material on surfaces that are muddy, frozen or containing frost or ice.
 5. Place backfill and fill materials evenly adjacent to structure’s required elevations.
 6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.

3.04 GRADING

- A. General:
1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
 2. Smooth the finished surface within specified tolerance.

3. Compact with uniform levels or slopes between points where elevations are shown on the drawings or between such points and existing grades.
 4. Where a change of slope is indicated on the drawings, construct a rolled transition section having a minimum radius of approximately 8'-0" unless adjacent construction will not permit such a transition or if such a transition defeats positive control of drainage.
- B. Grading outside building lines:
1. Grade adjacent to buildings to achieve drainage away from the structures and to prevent ponding.
 2. Finish the surfaces to be free from irregular surface changes, and:
 - a. Shape the surface of areas scheduled to be under walks to line, grade and cross-section with finished surface not more than 0.10 ft above or below the required sub-grade elevation.
 - b. Shape the surface of areas scheduled to be under pavement to line, grade and cross-section, with finished surface not more than 0.05 ft above or below the required sub-grade elevation.

3.05 COMPACTING

- A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557. 85% proctor density in lawn area and 95% proctor density in building area.
- B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place and/or as specified by the Soil Engineer's report.
1. Structures:
 - a. Compact the top 8" of sub-grade and each layer of fill material or backfill material at 98% of maximum density unless otherwise called out in the plans or soils report.
 2. Lawn and unpaved areas:
 - a. Compact the top 8" of sub-grade of fill material or backfill material at 85% of maximum density. Compact all other layers below the top 8" of fill material or backfill 95% of maximum density. The top 8" is not to exceed 90% of maximum density.
 - b. Compact the upper 12" of natural soils exposed by excavating, at 85% of maximum density. This is not to exceed 90% of maximum density.
 3. Walks
 - a. Compact the top 8" of sub-grade and each layer of fill material or backfill material at 95% of maximum density unless otherwise called out in the plans or soils report.
 4. Pavements:

- a. Compact the top 8" of sub-grade and each layer of fill material or backfill material at 95% of maximum density unless otherwise called out in the plans or soils report.
- C. Moisture control:
 - 1. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Owner's Representative.

3.06 TREATED SUBGRADE

- A. All parking lot pavement sub-grade shall be treated in accordance the plans and Engineers Soils Report.

3.07 FIELD QUALITY CONTROL

- A. Secure Owner's Representative's inspection and approval of sub-grades and fill layers before subsequent construction is permitted thereon.
- B. Provide at least the following tests to the approval of the Owner's Representative.
 - 1. At paved areas, a minimum of one field density test for every 7,500 square feet, but a minimum of three tests for all areas or as requested by the Owner's Representative. Testing to be paid for by the City.
 - 2. At lawn and unpaved areas, at least one field density test for every 20,000 square feet, but a minimum of three test for all areas or as requested by the Owner's Representative. Testing to be paid for by the City.
 - 3. Sub-grade shall be checked for stability even though it may meet the compaction requirements. The check for stability shall be proof rolling with a large roller or loaded dump truck and visual observation to insure that there is no pumping of the sub-grade.
- C. If, in the Owner's Representative's opinion based on reports of the testing laboratory, sub-grade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 01410 of these Specifications. Re-testing of areas that failed and have to be re-tested to be paid for by the contractor.

3.08 MAINTENANCE

- A. Protection of newly graded areas:
 - 1. Protect newly graded areas from traffic and erosion and keep free from trash and weeds.

2. Repair and reestablish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape and compact to the required density prior to further construction.

3.09 CERTIFICATION

- A. Upon completion of this portion of the work and as a condition of its acceptance, deliver to the Owner's Representative a written report certifying that the compaction requirements have been obtained. State in the report the area or fill or embankment, the compaction density obtained and the type or classification of fill material placed.

END OF SECTION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Finish grade subsoil.
- B. Place, level, and compact topsoil.

1.02 RELATED WORK

- A. Section 02211 - Rough grading subsoil to site contours.
- B. Section 02515 - Concrete Paving.

1.03 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, sidewalks, paving and curbs.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Imported, see Section 02220, Excavating, Backfilling and Compaction; Section 02485, Seeding and 02934, Sodding.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify site conditions and note irregularities affecting work of this Section.
- B. Beginning work of this Section means acceptance of existing conditions.

3.02 SUBSOIL PREPARATION

- A. Eliminate uneven areas and low spots. Remove debris, roots, branches, and stones, in excess of ½ inch in size. Remove subsoil contaminated with petroleum products.

3.03 PLACING TOPSOIL

- A. Place topsoil in areas where earth or no other building or paving is scheduled on the drawings.
- B. Use topsoil in relatively dry state. Place during dry weather.

- C. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.
- D. Remove stone, roots, grass, weeds, debris, and foreign material while spreading.
- E. Manually spread topsoil around trees, plants, building, and concrete curbs to prevent damage.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.04 TOLERANCES

- A. Top of Topsoil: Plus or minus 1/10 ft.

END OF SECTION

LANDSCAPE IRRIGATION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this Section.
- B. Coordinate work of this Section with other underground utilities and with trades responsible for their installation. Refer to respective Drawings pertaining to other work.
- C. All references in this Section to “Contractor” and/or “Irrigation Contractor” shall mean “Landscape Contractor or Irrigation Contractor”.
- D. Carefully examine all of the Contract Documents for requirements that affect the Work of this Section.

1.2 WORK DESCRIPTION

- A. The work under this Section consists of furnishing adequate numbers of skilled workmen who are thoroughly trained and experienced and installing all materials, equipment and services required to complete and provide a fully operational, automatic landscape irrigation system for the turf and landscape areas depicted on the final approved landscape plans.
- B. The system shall automatically irrigate, using spray or rotary sprinklers as needed, on all turf areas as indicated on the landscape plan and as directed by the Owner. The system shall automatically irrigate, using spray sprinklers and/or drip irrigation, all landscape areas as indicated on the landscape plan and as directed by the Owner.
 - 1. The primary source of irrigation water is a domestic water supply from one (1) 1 1/2” water meters.
 - 2. The control system at a location determined by the Owner. Training, programming and start-up of control system shall be by a trained professional.
 - 3. Trench excavation, back filling and bedding materials, together with the testing and proper scheduling of the completed installation shall be included as part of this scope of work.
 - 4. The work shall be constructed and finished in every respect in a good, workmanlike and substantial manner, to the full intent and meaning of the

Specifications. All parts necessary for the proper and complete execution of the work, whether the same may have been specifically mentioned or not, shall be done or furnished in a manner corresponding with the rest of the work as if the same were specifically herein described.

5. Record Drawing (As-built) as well as generation of the Operating & Maintenance Manual in accordance to these specifications shall also be included in this work.
- C. At the completion of work, contractor shall perform and successfully complete the tests as outlined in Section 3.13 "SYSTEM TESTING, START-UP AND ADJUSTMENT"

1.3 PERMITS AND INSPECTIONS

- A. The work under this Section shall comply with all ordinances and regulations of authorities having jurisdiction.
- B. Obtain and pay for all permits to any agency having jurisdiction over the work required for the execution of this Section.
- C. Furnish copies of Permits and Approval Notices to the Owner's Representative before requesting final payment.
- D. The Contractor shall include in their bid any charges by the Water Department, Utility Company, or other authorities for work done by them and charged to the Contractor.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division Specification Sections.
- B. The Contractor shall provide copies of product specification sheets on all proposed equipment to be installed to the Owner's Representative for approval prior to the start of work, in accordance with the parameters of Division-1. Work on the irrigation system may not commence until product sheets are submitted and approved. Submittals shall be highlighted to show proper model, nozzles, sizes, flows, etc. Submittals not properly highlighted or marked up will be rejected. As a minimum, the following equipment shall be included in the submittal:
 1. Backflow Preventer and Enclosure
 2. Pressure Regulator and Master Valve
 3. Main Line Pipe

4. Lateral Line Pipe
5. Ductile Iron Pipe (N/A)
6. Schedule 40 and Schedule 80 Fittings and Nipples
7. Swing Joints Assemblies including Swing Pipe and Fittings
8. Ductile Iron Fittings
9. Manual Valves: Main Line Isolation and Control Valve Isolation and Manual Control Valves
10. Automatic Electric Control Valves
11. Automatic Drain Valves (Lateral Lines) (N/A)
12. Air Vacuum Relief Valve, Wye Strainer and Isolation Valve (N/A)
13. PVC Check Valves (Low Head Drainage)
14. Quick Coupling Valves, Keys and Hose Swivels
15. Valve Boxes and Enclosures
16. Control Wire and Waterproof Connectors
17. Sprinkler Heads and Nozzles
18. Controller and Remote Maintenance Operator
19. Environmental Sensors
20. Flow Sensor (N/A)
21. Ground Rods, Plates and Wire
22. Solvent Cements and Cleaner/Primers
23. Miscellaneous Materials

1.5 QUALITY ASSURANCE

- A. Irrigation Contractor: A firm which has at least five (5) years of experience in work of the type and size required by this Section and which is acceptable to the Owner's Representative.

- B. References: The Installation Contractor must supply three references for work of this type and size with their bid including names, phone numbers and email addresses of contact person(s).
- C. Applicable requirements of accepted Standards and Codes shall apply to the Work of this Section and shall be so labeled or listed:
 - 1. American Society for Testing & Materials (ASTM)
 - 2. National Plumbing Code (NPC)
 - 3. National Electric Code (NEC)
 - 4. National Sanitary Foundation (NSF)
 - 5. American Society of Agricultural Engineers (ASAE)
 - 6. Underwriters Laboratories, Inc. (UL)
 - 7. Occupational Safety and Health Regulations (OSHA)
 - 8. American Society of Irrigation Consultants (ASIC)

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store and handle all materials in compliance with manufacturer instructions and recommendations. Protect from all possible damage. Minimize on-site storage. Contractor is responsible for the security of all stored materials on site.

1.7 GUARANTEE

- A. The Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law.
- B. In addition to the manufacturers guarantees the Contractor shall warrant the entire irrigation system, both parts and labor for a period of one (1) year from the date of acceptance by the Owner.
- C. As part of the one-year warranty the Contractor shall perform the first year-end winterization and spring start-up for the irrigation system.
- D. Should any problems develop within the warranty period because of inferior or faulty materials or workmanship, they shall be corrected to the satisfaction of the Owner's Representative at no additional expense to the Owner.

- E. A written warranty showing date of completion and period of warranty shall be supplied upon completion of each segment of the project.

1.8 COORDINATION

- A. The Contractor shall at all times coordinate his work closely with the Owner's Representative to avoid misunderstandings and to efficiently bring the project to completion. The Irrigation Contractor shall also coordinate their work with that of the electrical contractor, general contractor, plumbing contractor and landscape contractor. The Owner's Representative shall be notified as to the start of work, progression and completion, as well as any changes to the drawings before the change is made. The Contractor shall also coordinate his work with that of his sub-contractors.

The Contractor shall be held responsible for and shall pay for all damage to other work caused by his work, workmen or sub-contractors. Repairing of such damage shall be done by the Contractor who installed the work as directed by the Owner's Representative.

1.9 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. Contractor shall include in their Bid an allowance for two (2) hours of instruction of Owner and/or Owner's personnel upon completion of check/test/start-up/adjust operations by a competent operator (The Owner's Representative office shall be notified at least one (1) week in advance of system testing, start-up and adjustment.
- B. Upon completion of work and prior to application for acceptance and final payment, a three ring, hard cover binders titled MAINTENANCE AND OPERATING INSTRUCTIONS FOR THE ROUTE 66 PARK IRRIGATION SYSTEM, shall be submitted to the Owner's Representative office. After review and approval, the copies will be forwarded to the Owner. Included in the Maintenance and Operating binder shall be:
 - 1. Table of Contents
 - 2. Written description of Irrigation System.
 - 3. System drawings:
 - a. One (1) copy of the approved irrigation plan;
 - b. One (1) reproducible copy of the Record Drawing (As-Built); Measurements on record drawings shall be surveyed or triangulated from permanent objects and recorded on Autocad compatible digital format;

- c. An Autocad compatible digital file (USB Flash Drive) of the record drawing;
- 4. A complete set of "APPROVED" submittals of all irrigation equipment;
- 5. A copy of the suggested "System Operating Schedule" which shall call out the controller program required (zone run time in minutes per day and days per week) in order to provide the desired amount of water to each area under "no-rain" conditions.
- 6. One (1) copy of the controller/valve/rain/moisture/flow sensor system wiring diagram.

1.10 EXAMINATION OF CONDITIONS

- A. The Contractor shall fully inform himself of existing conditions on the site before submitting his bid, and shall be fully responsible for carrying out all work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed, except those conditions described in the GENERAL CONDITIONS.

1.11 PROCEDURE

- A. Notify all city departments and/or public utility owners concerned, of the time and location of any work that may affect them. Cooperate and coordinate with them in the protection and/or repairs of any utilities.
- B. Provide and install temporary support, adequate protection and maintenance of all structures, drains, sewers, and other obstructions encountered. Where grade or alignment is obstructed, the obstruction shall be permanently supported, relocated, removed or reconstructed as directed by the Architect.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All materials to be incorporated in this system shall be new and without flaws or defects and of quality and performance as specified and meeting the requirements of the system. All material overages at the completion of the installation are the property of the Contractor and shall be removed from the site.
- B. No material substitutions from the irrigation products described in these specifications and shown on the drawings shall be made without prior approval and written acceptance from the Owner's Representative.

2.2 PVC IRRIGATION PIPE AND FITTINGS

- A. All pipe shall bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating in psi, and date of extrusion.
- B. All main line pipe, two and one-half inch (2-1/2") and larger, shall be PVC, Class 200, Type 1120, SDR 21, Gasket-Joint PVC, conforming to ASTM D1784 and ASTM D2241. Rubber gasket shall conform to ASTM D3139. Pipe shall be as manufactured by PipeLife Jet Stream or approved equal.
- C. All main line pipe, two inches (2") and smaller shall be PVC Type 1120-1220 Schedule 40, belled end solvent weld and conforming to ASTM D1784, cell class 12454 and ASTM 1785.
- D. All supply line piping from the water meters to the inlet of the backflow preventer shall meet City of Sapulpa codes and requirements.
- E. All lateral pipe 3/4" and larger shall be PVC, Class 200 Type 1120, SDR 21, with solvent-weld PVC joints. Lateral pipe shall conform to ASTM No. D2241 as manufactured by PipeLife Jet Stream or approved equal. All 1/2" lateral pipe shall be PVC Class 315 Type 1120, SDR 13.5, with solvent-weld PVC joints.
- F. Fittings for solvent weld PVC pipe shall be Schedule 40 solvent weld PVC fittings as manufactured by Spears or approved equal.
- G. Fittings for gasket-joint PVC pipe, for all directional changes, pipe reductions and plugs shall be deep bell push-on gasket joint ductile iron fittings for PVC pipe. All connections of main line piping to control valve shall be push-on gasket joint ductile iron service tees. Fittings shall be manufactured of ductile iron, grade 70-55-05 in accord with ASTM A536 and gaskets shall meet ASTM F477. Fittings shall be as manufactured by Harrington Corporation, Harco, or equal.
- H. Fittings shall bear manufacturer's name or trademark, material designation, size, and applicable I.P.S. schedule.
- I. PVC Schedule 80 fittings and nipples shall be used on all fittings required between the main line tap and the electric control valve as well as the threaded connection between the electric control valve and the lateral piping. Schedule 80 fittings shall be Spears Manufacturing or approved equal. Contractor shall use teflon tape or other approved sealing method according to valve, sprinkler and fitting manufacturer's recommended practice for the specific application. All Schedule 80 PVC nipples shall be supplied with machined threads.
- J. PVC solvent shall be NSF approved, for Type I and Type II PVC pipe, and Schedule 40 and 80 fittings. Cement is to meet ASTM D2564 and FF493 for potable water pipes. PVC solvent cement shall be Rectorseal Gold, IPS Weld-ON 711, Oatey Medium Cement or equal, and shall be used in conjunction with the

appropriate primer. Primer shall be NSF approved, and formulated for PVC and CPVC pipe applications. Primer is to meet ASTM F 656. Primer shall be Rectorseal Jim PR-2, IPS Weld-ON P-68 Clear, Oatey Purple Primer for PVC and CPVC, or equal.

2.3 PIPE SLEEVES

- A. All pipe sleeves beneath non-soil areas (with the exception of City of Sapulpa streets) shall be PVC, Schedule 40 water pipe as manufactured by PipeLife Jet Stream or equal. Sleeves shall be the larger of the minimum size stated in these specifications, shown on the contract drawings or two (2) times larger than the total outside diameter of all the piping contained within the sleeve. All irrigation control wire shall be routed in a separate 3" minimum diameter sleeve.
- B. All sleeving to protect pipe or control wires under city streets and roads or below grade crossings shall be ductile iron or steel and shall meet the standards and specifications of the City of Sapulpa Water and Sewer Department. Sleeves shall be two (2) times larger than the total outside diameter of all the piping contained within the sleeve. All irrigation control wires shall be routed in a separate 2" minimum diameter sleeve.
- C. Minimum pipe sleeve size shall be 4" diameter.

2.4 WIRE CONDUIT

- A. Conduit for wiring beneath non-soil areas shall be PVC, SCH-40 conduit with solvent-weld joints, as manufactured by Certainteed, Cresline or equal.
- B. Sweep ells shall be standard electrical type PVC schedule 40 long sweep elbows. Cap sweep ell with tri-plug with the ring for securing nylon pull rope.
- C. Conduit for above ground wiring to environmental sensors, weather stations or controllers shall be galvanized, rigid metallic conduit.

2.5 SPRAY SPRINKLERS

- A. Full and part circle pop up spray sprinklers shall be pressure regulating at 30 psi, plastic construction with ratcheting riser, removable nozzle and check valve. Nozzle size shall be as indicated on the drawing and in the legend. Pop-up height shall be 4 inches for turf and 12" for planting areas. The sprinkler shall have one-half inch (1/2") IPS water connection on the bottom and side of the sprinkler. Nozzle size shall be as required to provide adequate coverage and avoid over spray onto walkways, roads, buildings and other permanent structures. Sprinkler shall carry a minimum 5-year exchange warranty against defects. Sprinklers shall be manufactured by Rain Bird, model 1804-PRS or 1812-PRS.

2.6 ROTARY SPRINKLERS

- A. Rotor Heads (3/4" Inlet): Small/medium rotary sprinklers shall be gear-driven, rotary type heads, designed for in-ground installation with integral check valves and in-riser flow shut-off capability. Sprinkler shall be capable of covering a 25-47 foot radius and flow range of 0.9-7.0 gpm at 45 pounds per square inch of pressure. Sprinklers shall have a one hundred percent warranty for five years minimum against defects in workmanship. The nozzle assembly shall elevate a minimum of four inches when in operation and retraction shall be achieved by a stainless steel spring. Riser assembly shall be plastic and shall incorporate a pressure regulator set at 45 psi. A nozzle wiper seal shall be included in the sprinkler for continuous operation under the presence of sand and other foreign material. All sprinkler parts shall be removable through the top of the unit through the removal of a heavy-duty threaded cap. Rotor shall be manufactured by Rain Bird model 5004-PL-R.
- B. Rotor Heads (1" Inlet): 4" Pop-up, top screwdriver adjust, rubber cover, water lubricated gear drive with radius reduction adjustment of at least 25 percent. Rotor shall incorporate nozzles with advanced water distribution assuring near-head water placement and uniformity ("Rain Curtain"). A check valve shall be provided to prevent low head drainage. Rotor shall have a 1" inlet, a pressure activated wiper seal and tapered riser to protect internal assembly from debris and ensure positive pop-up and retraction. Rotor shall have at least a 5 year trade warranty. Rotor shall be Rain Bird model F4-PC (part circle) or F4-FC (full circle) or approved equal.
- C. Rotor Heads (1" Inlet - For Dust Control): 4" Pop-up, top screwdriver adjust, rubber cover, water lubricated gear drive with radius reduction adjustment of at least 25 percent. Rotor shall incorporate nozzles with advanced water distribution assuring near-head water placement and uniformity ("Rain Curtain"). Rotor shall be equipped with high speed of rotation option for dust control. A check valve shall be provided to prevent low head drainage. Rotor shall have a 1" inlet, a pressure activated wiper seal and tapered stainless steel riser to protect internal assembly from debris and ensure positive pop-up and retraction. Rotor shall have at least a 5 year trade warranty. Rotor shall be Rain Bird model F4-PC-SS-HS (part circle) or approved equal.

2.7 BACKFLOW PREVENTER

- A. Provide backflow preventers meeting the requirements of the City of Sapulpa, OK for irrigation systems equal to Zurn Model 975XL – 1 1/2". The 1 1/2" backflow preventer shall be installed using Type L copper pipe and shall incorporate two (2) unions for ease of installation and maintenance.
- B. The backflow preventer shall be protected from freeze damage by covering it with an insulated cover and using thermostatically controlled "heat tape" or heaters. The insulated box shall be constructed of fiberglass, hinged to provide full access to the preventer. The enclosure shall be designed to accommodate the heat tape, for the

recommended drain size and for the size of the backflow preventer to be installed. Enclosure shall be Hubbell Model HB1.5 or approved equal.

- C. The backflow preventer protective enclosure shall be installed on a concrete footing constructed of a minimum 3500 psi concrete and shall meet the requirements of the backflow preventer cover manufacturer's recommendation for size and mounting requirements including hardware. Contractor shall reference installation detail drawings for details of the base. The ground shall be hand excavated to provide a solid surface for the concrete foundation. The surface of the concrete base must be finished level to insure proper installation of the cover. The outside edges of the concrete base shall sloped away slightly to ensure water drains away from the enclosure.

2.8 ELECTRIC CONTROL VALVES

- A. Electric control valves shall be remote control diaphragm type glass-filled nylon body valves with flow control and 200-psi pressure rating. Valve shall have globe configuration, 24 volt electric.
- B. Valves shall be manufactured by Rain Bird model PEB or approved equal.

2.9 QUICK COUPLING VALVES AND KEYS

- A. Valve equal to Rain Bird 5RC with spring loaded rubber cover. Valve key shall be same manufacturer of valve equal to Rain Bird 55DK with bronze hose swivel adapters, Rain Bird SH-1. Quick coupling valve shall be prevented from rotation with Leemco Model LS-120 valve stabilizer. Provide six (6) quick coupler keys and swivels.
- B. Isolation valves for the quick coupling valves shall be Spears Tru-Union model 3629-015 (1-1/2") or approved equal.

2.10 AUTOMATIC DRAIN VALVES

- A. Automatic drain valves shall be model 22163 (1/2") or 22167 (3/4") as manufactured by King Innovation, Inc. At least four (4) drains per piping zone shall be installed at the points of lowest elevation to permit proper drainage in areas susceptible to freezing. Drain valves shall be installed on the zones with 1/2" inlet spray heads or 3/4" inlet rotary heads.

2.11 ISOLATION VALVES

- A. Main line isolation valves 2 inches and smaller in size shall be gate type, of bronze construction, US Manufacture with a 200 WOG. The valve shall meet Federal Specifications MSS SP-80 equal to Hammond Model IB645 or approved equal.

- B. Main line isolation valves 2-1/2 inches and larger in size shall be cast iron epoxy coated inside and outside, long bell length ring-tite valves, 200 psi rated, ductile iron gland flange, bronze stem-seal box, o-ring stem seal replaceable under pressure, stainless steel stem, 2 inch operating nut and replaceable disc conforming to AWWA C-509 as manufactured by Nibco, Model P-619-RW or approved equal.
- C. Electric Control Valve Isolation Valves: 2" and smaller shall be of the ball type, plastic construction, tru-union threaded ends and have a maximum pressure rating of 235 psi at 73 degrees F. The valves shall be equal to Spears Model 3629-000 size the same as the control valve.

2.12 INLINE CHECK VALVES

- A. Inline check valves to prevent low head drainage shall be the same size as the line they are installed in. They shall be PVC, 150 PSI pressure rating at 73 degrees F. true union utility swing check style. All valves shall be maintenance free seal unit construction with EPDM seat and weighted disc. Check valves shall be equal to Spears model S1720-07 (3/4") or S1720-10 (1") socket with true union.

2.13 VALVE BOXES

- A. All valve boxes and covers shall be injection molded of structural foam polyethylene with a melt index between 10 and 12 and shall be UV stabilized. All covers shall be green in color.
- B. Valve box extensions shall be provided and installed as required for proper box depth. Valve box extensions shall be made by the same manufacturer.
- C. Valve boxes for isolation valves, quick coupling valves, air release and isolation valves and in-line check valve locations shall be 10-inch round valve boxes with bolt down covers equal to Carson Industries, Inc. model 910-12 or Rain Bird model VB10RNDH. Provide manufacturer's stainless steel locking bolts and associated clips for each valve box supplied. Valve box extensions shall be constructed with 8" I.D. corrugated polyethylene pipe, as manufactured by Advanced Drainage Systems, Inc. (ADS), cut to length as required to achieve proper coverage over pipe and valves.
- D. Valve boxes for automatic electric control valves (non-drip zones) and master control valves shall be 14"x19" ("standard") valve boxes with bolt down covers equal to Carson Industries Inc. model 1419-12 with model 1419E-1 6" extensions or Rain Bird VBSTDH with model VBSTD6EXTB 6" extension. Provide manufacturer's stainless steel locking bolts and associated clips for each valve box supplied.
- E. Valve boxes for wire splices shall be 10-inch round valve boxes with bolt down covers equal to Carson Industries, Inc. model 910-12, NDS model 212-BC or Rain

Bird model VB10RNDH. Provide manufacturer's stainless steel locking bolts and associated clips for each valve box supplied. Valve box extensions shall be constructed with 8" I.D. corrugated polyethylene pipe, as manufactured by Advanced Drainage Systems, Inc. (ADS), cut to length as required to achieve proper coverage over pipe and valves. All splices shall be in separate valve boxes and not included with isolation valves.

2.14 CONTROL SYSTEM

- A. The controller shall be of a hybrid type that combines electro-mechanical and micro-electronic circuitry capable of fully automatic or manual operation. The controller shall be housed in a wall-mountable, weather-resistant metal cabinet with a key-locking cabinet door suitable for either indoor or outdoor installation.

The controller shall have a base station capacity of 12 stations with two additional expansion slots capable of receiving ESPLXME2 station modules to create a controller capacity of up to 36 stations. All stations shall have the capability of independently obeying or ignoring any weather sensor as well as using or not using the master valves. Station timing shall be from 0 minutes to 12 hours. The controller shall have a Seasonal Adjustment by program which adjusts the station run time from 0 to 300% in 1% increments. The controller shall also have a Monthly Seasonal Adjustment of 0 to 300% by month. Station timing with Seasonal Adjustment shall be from 1 second to 16 hours.

The controller shall have 4 separate and independent programs which can have different start times, start day cycles, and station run times. Each program shall have up to 8 start times per day for a total of 32 possible start times per day. The 4 programs shall be allowed to overlap operation based on user-defined settings which control the number of simultaneous stations per program and total for the controller. The controller shall allow up to 8 valves to operate simultaneously per program and total for the controller including the master valves.

The controller shall have a 365-day calendar with Permanent Day Off feature that allows a day(s) of the week to be turned off on any user selected program day cycle. (Custom, Even, Odd, Odd31, & Cyclical). Days set to Permanent Day Off shall override the normal repeating schedule and not water on the specified day(s) of the week. The controller shall also have a Calendar Day Off feature allowing the user to select up to 5 dates up to 365-days in the future when the controller shall not start programs. The controller shall incorporate a Rain Delay feature allowing the user to set the number of days the controller should remain off before automatically returning to the auto mode.

The controller shall have Cycle+Soak water management software which is capable of operating each station for a maximum cycle time and a minimum soak time to reduce water run-off. The maximum cycle time shall not extended by Seasonal Adjustment.

The controller shall incorporate a FloManager feature providing real-time flow, power, and station management. FloManager shall manage the number of stations operating at any point in time based on water source capacity, station flow rate, number of valves per station; user-defined simultaneous stations per program and for the controller. The controller shall provide station priorities to determine the order in which stations shall operate. The controller shall ignore the station number and instead operate the highest priority stations first and the lower priority stations last.

The controller shall offer Water Windows for each program. This function sets the allowed start and stop time where watering is allowed. If the watering cannot be completed by the time the Water Window closes, the stations with remaining run time are paused and watering automatically resumes when the Water Window opens the next time.

The controller shall include an integrated Flow Smart Module with flow sensing functionality. The Flow Smart Module shall accept sensor decoder input from 1 - 5 flow sensors with no flow scaling device required.

A FloWatch Learn Flow Utility which learns the normal flow rate of each station shall be included. Each time a station runs FloWatch compares the current real-time flow rate to the learned rate and takes user-defined actions if high flow, low flow, or no flow is detected. FloWatch shall automatically determine the location of the flow problem and isolate the problem by turning off the affected station(s) or master valve(s). FloWatch shall be compatible with both normally closed and open master valves. A Manual Master Valve Water Window shall be provided to coordinate daytime manual watering with the flow sensing. This Water Window shall offer programmable days of the week and manual watering additional flow rate.

The wall mount controller shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California Model ESPLD Modular or approved equal with size as shown on contract drawings.

- B. Provide One (1) Rain Bird Model LIMRKIT Landscape Irrigation and Maintenance Remote 3.0. Kit includes the model LIMRTX transmitter, model LIMRRX receiver, LIMRQC603 and LIMRQC503 connectors, batteries and plastic carrying case.

2.15 RAIN-FREEZE SENSOR

The rain sensor shall shut off the irrigation system when the measured rainfall equals or exceeds the shutoff setting of the sensor device. The freeze sensor shall be adjustable between 33 degrees F. and 41 degrees F. and shall shut off the irrigation system when the temperature reaches at or below the set point. The device shall be adjustable with positive stops from 1/8th inch to 1/2 inch. Sensor shall have quick shut-off capability to suspend irrigation during a rain event. The

device shall be U.L. rated, maintenance free and shall absorb water and shall dry out at rates similar to turf. The device shall have a self-leveling bracket which can be mounted to flat surfaces or rain gutters. Sensor shall be installed within 700 feet line-of-sight between sensor and irrigation controller. The wireless device shall be manufactured by Rain Bird Mfg, Model WR2RFC or approved equal.

2.16 WIRE AND COMMUNICATION CABLE

- A. Wire for the 2-Wire decoder system shall consist of two (2) tin coated, soft drawn bare copper, solid 14 AWG conductors. The two conductors shall be insulated with a high quality polyvinylchloride (PVC) for system applications up to 600 volts. One conductor shall be insulated red and one conductor insulated yellow. The two conductors shall be laid parallel and pressure extruded with a solid color, linear low density, sunlight resistant polyethylene (PE) outer jacket. Standard colors for the jacket shall be red, green, blue, yellow, black, purple and orange. The wire shall be rated as direct burial and shall be as manufactured by Regency Wire and Cable, model "Rain Bird" Maxi Cable or approved equivalent.
- B. In ground wire connections shall be UL listed, rated for 600 Volts manufactured by Rain Bird model DBRY20 or DBT020 or approved equal. All wire connections shall be made in specified valve boxes.
- C. All wire connections shall be made in specified valve boxes.
- D. Wire type and method of installation shall be in accordance with local codes for NEC Class II circuits of 30-volt A.C. or less.

2.17 SWING JOINTS

- A. All 1/2" inlet spray heads and 3/4" inlet rotary heads shall be connected to the irrigation piping utilizing 1/2" thick walled polyethylene tubing (Rain Bird Model SPX-FLEX100) and appropriate insert fittings (Rain Bird Models SBE-050, SBE-075, SBA-050, SBA-075). Sufficient lengths of flexible pipe shall be used to form a sweeping arc to insure that spray heads are supported properly and allow for vertical adjustment and movement during service.
- B. Swing Joints: All 1" inlet sprinkler heads shall be installed on prefabricated, manufactured swing joint assembly rated for 315 psi with prelubricated buttress threads and O'ring seals equal to Spears Manufacturing Co. Series 5807-01012 or Rain Bird Model TSJ-12.

2.18 GROUNDING EQUIPMENT

- A. Each electronic component of the control system shall be grounded to the manufacturer's recommended resistance to ground.

- B. Proper grounding practices shall include both the installation of ground rods and grounding plates. Ground rods shall be copper clad, 5/8-inch diameter x 10 foot long grounding rods and connected to the electrical equipment and grounding plate with minimum #6 AWG, solid, bare copper wire. Grounding plates shall be 4-inch x 96-inch x 0.0625-inch copper as outlined below. Minimum 20-foot separation between rod and plate. Minimum 12-foot separation between controller and ground rod. All connections to rods shall be with Cadweld connectors as specified. All connections to plates shall be performed by the plate manufacturer with 25-feet of bare copper wire already attached. Each grounding rod is to be covered by a 4-inch round, grated top, plastic valve cover and six inches of 4-inch SDR35 PVC. Plates shall be installed in ground enhancement material. Plates shall be covered with 4-inch plastic grated cover with detection and minimum 36 inches of 4 inch ADS drainage pipe. Ground rods and plates shall be UL listed.

2.19 SAND

- A. Sand used for backfilling of trenches; under, around and over PVC lines shall be as specified in SECTION: EARTHWORK.

2.20 CONCRETE BASES AND THRUST BLOCKS

- A. Standard concrete mix shall be in accordance with ASTM C150, ASTM C-33, and ASTM C-94 with a compressive strength (28 days) of 3,500 psi.
- B. All bell and gasket mainline pipe and fittings shall have thrust blocks sized and placed in accordance with pipe manufacturer's recommendations for standard concrete mix. Thrust blocks shall be installed at all tees, elbows, crosses, reducers, plugs, caps and valves. Contractor shall be responsible to insure the stability of all thrust blocks. A minimum 4 mil "visqueen" plastic poly sheeting shall be used to protect fitting and pipe from concrete during thrust block installation.
- C. All concrete bases shall be standard concrete mix. Sizes shall be as indicated on the Drawings and sited in the Specifications.

2.21 SPARE PARTS

- A. Contractor shall supply the following tools and equipment to the Owner's Representative before final observation:
 - 1. Two (2) tools for disassembling and adjusting each type of sprinkler head provided.
 - 2. Six (6) quick coupler keys, hose swivels and locking cover keys (N/A)
 - 3. Two (2) of each type sprinkler head and pattern (PC & FC) used in the project.

4. Two (2) of each type nozzle used in the project.
 5. Two (2) diaphragms and solenoids for each type and size of control valve used in the project.
- B. Before final observation can occur, written evidence that the Owner's Representative has received the tools and equipment must be shown to the Owner.

PART 3 – EXECUTION

3.1 GENERAL

- A. Before work is commenced, hold a conference with the Owner's Representative to discuss general details of the work.
- B. Examine all contract documents applying to this Section noting any discrepancies and bringing the same to the attention of the Owner's Representative for timely resolution.
- C. Verify dimensions and grades at job site before work is commenced. Do not proceed with installation of the landscape irrigation system when it is apparent that obstructions or grade differences exist or if conflicts in construction details, irrigation equipment legend or specific notes are discovered. All such obstructions, conflicts, or discrepancies shall be brought to the attention of the Owner's Representative.
- D. Make all field measurements necessary for the work noting the relationship of the irrigation work to the other trades. Coordinate with other trades (landscaping and other site work trades). Project shall be laid out essentially as indicated on the Irrigation Plans, making minor adjustments for variations in the planting arrangement. Major changes shall be reviewed with the Owner's Representative prior to proceeding.
- E. Coordinate installation of all sprinkler materials, including pipe, to avoid conflict with the trees, shrubs, or other plantings. Special attention shall be made to avoid damage to the root system of existing trees. Contractor shall contact Owner's Representative for guidance on trenching in this area.
- F. During progress of work, a competent superintendent and all assistants necessary shall be on site. All shall be satisfactory to the Owner's Representative. The superintendent shall not be changed, except with the consent of the Owner's Representative, unless that person proves unsatisfactory and ceases to be employed. The superintendent shall represent the Contractor in his absence and all directions given to the superintendent shall be as binding as if given to the Contractor.
- G. At all times, protect existing irrigation, landscaping, paving, structures, walls,

footings, etc. from damage. Any inadvertent damage to the work of another trade shall be reported at once.

- H. Replace, or repair to the satisfaction of the Owner, all existing paving disturbed during course of work. New paving shall be the same type, strength, texture, finish, and be equal in every way to removed paving.

3.2 PIPE AND FITTINGS INSTALLATION

- A. Using proper width trencher chain, excavate trenches to a depth of minimum pipe coverage plus six inches. Trenches shall have sides as nearly vertical as possible. Remove all lumber, rubbish and rocks larger than 1 inch from the trenches. Provide a uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Make the width of the trench a minimum of 1 1/2 times the diameter of the piping but not less than 4 inches.
- B. Loam or topsoil encountered within the limits of trench excavation for irrigation mains and branch lines shall be carefully removed to the lines and depths as shown on the Drawings and stockpiled for subsequent replacement in the upper 6 inches of the trench from which it is excavated. Such removal and replacement of the quantities of loam shall be considered incidental to the irrigation system and no additional compensation will be allowed therefore.
- C. Back filling shall be accomplished as follows: the first 10-inch of backfill material shall contain no foreign matter and no rock larger than 1-inch in diameter. Carefully place material around pipe and wire and tamp in place. Remainder of backfill shall be laid-up in 6-inch (maximum) lifts and tamped to compaction with mechanical equipment. Compaction in paved areas shall be to 98% standard proctor. Compact backfill in trenches to dry density equal to the adjacent undisturbed soil, and conform to adjacent grades without dips, sunken area, humps, or other irregularities. Frozen material shall not be used for backfill.
- D. Do backfilling when pipe is cool. During hot weather keep pipe cool by backfilling in the early part of the morning before the heat of the day.
- E. Do not, under any circumstances, use truck wheels or flooding for compacting soil.
- F. Restore grades and repair damage where settling occurs.
- G. All solvent-weld joints shall be made in strict accordance with manufacturer's recommendations and ASTM D2855 Standard Practice. Make solvent welds with a nonsynthetic bristle brush in the following sequence: Apply an even coat of solvent to the outside of the pipe. Then apply solvent to the inside of the fittings and then re-apply a light coat of solvent to the outside of the pipe, making sure that coated area on the pipe is equal to the depth of the fitting socket. Insert pipe quickly

into the fitting and turn the pipe approximately 1/4 turn to distribute the solvent and remove air bubbles. Check all tees and ells for correct position, then hold joint for approximately 15 seconds so that pipe does not push out from the fitting. Wipe off any excess of primer or solvent from each connection. Allow at least 15 minute drying time for each weld joint before moving. When the temperature is above 80° F, allow connections to set minimum 24 hours before pulling or pressure is applied to the system. When temperature is below 80° F, follow manufacturer's recommendations. Provide and install for expansion and contraction as recommended. Wire shall be laid in same trench as mainline and at pipe invert (see WIRING INSTALLATION).

- H. The minimum cover over the pipe shall be as follows:
 - 1. Main line pipe - 20 inches of cover over pipe
 - 2. Lateral pipe – 15 inches of cover over pipe
- I. Cut plastic pipe with handsaw or pipe-cutting tool, removing all burrs at cut ends. All pipe cuts are to be square and true. Bevel cut end as required to conform to Manufacturer's Specifications.
- J. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. At times, when installation of the piping is not in progress, the open end(s) of the pipe shall be closed by a watertight plug or other means. All piping, which cannot temporarily be joined, shall be sealed to make as watertight as possible. This provision shall apply during the lunch hour as well as overnight. Pipe not to be installed that day shall not be laid out. Should water enter the trench during or after installation of the piping, no additional piping may be installed or back filled until all water is removed from the trench. Pipe shall not be installed when water is in the trench, when precipitation is occurring, or when the ambient temperature is at 40° F or below. Pipe installed at temperatures below 40° F shall be removed and replaced at no cost to the Owner. PVC pipe shall be snaked in the trench to accommodate for expansion and contraction due to changes in temperature.
- K. Carefully install system in areas of existing vegetation designated to remain to provide minimal disturbance feasible. When trenching under the drip-line of existing trees, extreme care must be given to avoid root damage. If at all possible avoid trenching inside the drip-line by going around the tree rather than under it. If trenching must occur under the drip-line, use either tunneling or hand-digging methods rather than a mechanical trencher. Minimize the impact of root severing by avoiding construction during hot, dry weather, keeping trees well watered before and after digging and covering roots with soil or mulch as soon as possible. Contractor shall contact Owner's Representative for guidance on trenching in this area. Where excavation must occur near trees, the Contractor shall provide proper root pruning and sealing methods shown in the landscape plans and specifications and approved by Owner's Representative.

- L. Maintain 6-inch minimum clearance between sprinkler lines and lines of other trades. Do not install sprinkler lines directly above another line of any kind.
- M. Maintain 1-inch minimum clearance between lines which cross at angles of 45 to 90 degrees.
- N. Exercise care when excavating, trenching and working near existing utilities.
- O. Throughout the guarantee period it will be the responsibility of the Contractor to refill any trenches that have settled due to incomplete compaction.
- P. Pulling of pipe will be allowed provided soil is suitable and specified depth of bury can be maintained.

3.3 THRUST BLOCKING

- A. All gasket joint bell-end fittings shall be blocked with an adequately sized thrust block as per ASAE Standard S376.1 and as depicted in the details. Blocking shall be in accordance with pipe and fitting manufacturer's recommendations. Thrust blocks shall be required at all changes in size and direction of bends, reducers, plugs and tees. Thrust blocks shall be installed against undisturbed soil in all cases. Concrete thrust blocks shall utilize 3,500-psi standard concrete mixture. Bricks, stones, boulders, etc. will not be accepted as thrust blocks or thrust block material. Premixed cement, sand and gravel packages "Sackcrete" will not be permitted as a thrust blocking material. Contractor to supply all material needed for thrust blocking.
- B. Size of thrust block shall be determined by working pressure, size and type of fitting, and soil conditions. Calculate area required for concrete thrust block in contact with soil. Refer to ASAE 376.2 for thrust block sizing information to determine size of thrust block for each condition.
- C. A minimum 4 mil "visqueen" plastic poly sheeting shall be used to protect fitting and pipe from concrete during thrust block installation.
- D. Under no circumstances will concrete block be approved for thrust blocks.

3.4 ELECTRICAL WIRE CONDUIT INSTALLATION

- A. Electrical conduit shall be installed in all non-soil areas, as well as for all above ground wiring where wire passes under or through walls, walks and paving to controllers and other sensors.
- B. Conduit shall extend 18 inches beyond edges of walls and pavement.

3.5 PIPE SLEEVING INSTALLATION

- A. Contractor is responsible for the supply and installation of sleeves whether shown on the drawings or not. Install sleeves under paving and other improvements prior to construction. Install where required to accommodate piping at proper depth to prevent damage by other construction activities and to provide specified burial depth for irrigation pipe. Location of sleeves to be recorded and marked.
- B. Sleeving shall be installed wherever piping is going under a non-soil area, generally where indicated on the Drawings. Cover over all sleeving pipe shall be appropriate for the specified depth of the pipe passing through the sleeve. Minimum coverage shall be 20 inches.
- C. Sleeving shall extend 24 inches beyond edges of walls and pavement.
- D. If finished pavement is in place, the Contractor shall bore under the pavement for sleeving installation using personnel experienced in the procedure. Contractor shall be responsible for all damage to finished paving due to improper boring.

3.6 ISOLATION VALVE INSTALLATION

- A. Install isolation valves in 10-inch round valve boxes with extensions at locations shown on the irrigation plan drawings.
- B. Install all isolation valves on a level crushed stone base so that they can be easily opened or closed with the appropriate valve wrench.
- C. Check and tighten valve bonnet packing before valve box and backfill installation.
- D. Provide and install thrust blocks for ring-tite valves as per detail.

3.7 VALVE AND VALVE BOX INSTALLATION

- A. Furnish and install a valve access box for each electric valve, quick coupling valve, isolation valve, wire splice, flushing valve, air/vacuum relief valve, in-line check valves, etc.
- B. Valves and valve boxes shall be installed where shown or directed, and shall be set plumb. Valve boxes shall be centered on the valves. Where feasible, valves shall be located outside the area of natural walkways or paths. Earth fill shall be carefully tamped around each valve box. Valve boxes should be supported by concrete blocks or pavers to ensure that any surface loads on the valve boxes will not be transmitted below to the pipe or valves and to minimize box settlement. All boxes shall have at least 6" depth of clean washed round river rock under the valve boxes for drainage.

- C. Electric control valves shall be connected to the main line in a plumb position with adjusting handle and all bolts, screws and wiring accessible through the valve box opening. Sufficient clearance shall be provided for service and operation.. Valve manifolds shall be installed in such a manner that it will not be necessary to remove more the one valve when a valve is removed or replaced. The valves shall be adjusted for proper operation as required by the manufacturer for the specified performance. Adjust zone valve operation after installation using flow control device on valve.

3.8 WIRING INSTALLATION

- A. Wiring shall be installed along with the main distribution line. Multiple wire bundles shall be cinched together at maximum 12-foot centers using plastic cable cinches and shall be laid beside, and at the same invert as, the irrigation lines. Sufficient slack for expansion and contraction shall be maintained and wiring shall at no point be installed tightly. Provide and install an additional 8 inches to 12 inches slack at all changes of direction. Wiring in valve boxes shall be a sufficient length to allow the decoder, valve solenoid, splice, and all connections to be brought above grade for servicing. This additional slack shall be coiled for neatness in the valve box.
- B. All wire shall be laid in trenches and shall be carefully back-filled to avoid any damage to the wire insulation or wire conductors themselves. In areas of unsuitable material, the trench shall have a 3 inch layer of sand or stone dust on the bottom before the wires are laid into the trench and back-filled. The wires shall have a minimum of 15 inches of cover. Wire not to be installed that day shall not be laid out.
- C. An expansion curl shall be provided and installed within 6 inches of each wire connection to a solenoid. Expansion curls can be formed by wrapping five (5) turns of wire around a 1-inch diameter or larger pipe and then withdrawing the pipe.
- D. Service wiring in connection with Drawings and local codes for 24-volt service. All in-ground wire connections shall be waterproofed with materials specified in PART 2 - PRODUCTS. All splices shall be made in valve boxes (wire runs requiring splices between valve locations shall be provided and installed in splice box-valve box shall be used). Splice locations shall be shown on the Record Drawings.
- E. Contractor shall provide a complete wiring diagram showing wire routing for the connections between the controllers, control valves and environmental sensors and flow sensor. See PART 1 - GENERAL for the inclusion of wiring diagram in operation and maintenance manuals.

3.9 CONTROLLER INSTALLATION

- A. Contractor to install all controller components, including required surge protection

and grounding at the owner approved location. Controllers and receivers for rain and freeze sensors and landscape maintenance operator shall be mounted on rack support structure shown on the drawings. Contractor shall program the controller with initial irrigation program and verify data transmission and proper valve operation.

- B. All 120 volt electrical supply requirements shall be provided and installed using a licensed electrician.

3.10 SPRINKLER INSTALLATION

- A. Spray sprinklers and rotary sprinklers shall be installed on flexible connections or swing joints as specified in PART 2 - PRODUCTS and shall be set plumb and level with the final grade and In accordance with manufacturer's recommendations. Locate part circle sprinklers to maintain a minimum of 4 Inches from walls and 2 Inches from other boundaries and borders.
- B. In turf areas where grass has not yet been established, sprinklers shall be initially installed on risers above grade level. When grass is established, the contractor shall lower sprinkler heads to their permanent position flush with the finish grade. This elevation is critical and care shall be taken to set them exactly at or slightly above finished grade, never below grade except as recommended by the manufacture.

3.11 QUICK COUPLING VALVE INSTALLATION

- A. Provide quick coupling valves at locations shown on the drawings.
- B. Quick coupling valves to be mounted on 1" inch PVC unitized swing joint with stabilizer.
- C. Quick couplers shall be installed in 10" round valve boxes and prevented from rotation utilizing the specified stabilizer bar.
- D. A tru-union style ball valve shall be installed outside of the playing area to isolate each quick coupling valve from the main irrigation line. The isolation valve shall be installed in a 10" round valve box as shown on the detail drawings.

3.12 GROUNDING INSTALLATION

- A. Contractor shall ground all electrical equipment according to the irrigation manufacturer's requirements and specifications. Each grounding rod shall be driven into the ground its full length within 8-feet of the controller and connected via a Cadweld connection to #6 solid, bare copper wire. The copper wire is to be installed in as straight a line as possible, and if it is necessary to make a turn or bend, it shall be done in a sweeping curve with a minimum radius of 8 inches and a minimum included angle of 90 degrees. There shall be no splices in the bare

copper wire. The top of the ground rod shall be driven below the ground surface. A 4-inch grated cover as specified, set a minimum of 1-inch below grade, shall be placed over the ground rod and Cadweld connection for periodic maintenance. Cover shall be installed on a minimum of 6 inches of 4-inch SDR35 PVC drainage pipe. Plates shall be installed 36 inches below grade with 50 lbs of ground enhancement material spread evenly below the plate in accordance with the manufacturer's requirements.

- B. Grounding rods shall be separated a minimum of 20 feet between grids. Grids shall be installed in an irrigated area.
- C. When tested, grounding grid shall have an earth resistance no greater than 5 ohms. If earth resistance is greater than 5 ohms, additional grounding plates and enhancement material shall be added to system until desired test results have been met.

3.13 SYSTEM TESTING, START-UP AND ADJUSTMENT

A. Flushing:

- 1. After all piping, valves, sprinkler bodies, pipe lines and risers are in place and connected, but prior to installation of sprinkler internals, open the control valves and flush out the system under a full head of water.
- 2. INITIAL FLUSHING OF LINES SHALL NEVER BE THROUGH SPRINKLER HEADS OR DRIP ZONES. Sprinkler internals, flush caps and riser nozzles shall be installed only after flushing of the system has been accomplished to the full satisfaction of the Owner's Representative.
- 3. Contractor shall be responsible for flushing the entire system after installation is complete and will be responsible for any clogged nozzles during the warranty period.

B. Testing:

- 1. Leakage test: With zone valves closed, pressure test mainlines by supplying and maintaining full static pressure continuously for one full hour. Observe for evidence of leakage by monitoring flow meter and by visual inspection of the exposed lines. Repair all leaks and retest until no water flow is observed. Owner's Representative must be contacted to inspect and witness the leak testing procedures.
- 2. Coverage test: perform a coverage test in the presence of the Owner's Representative (notify Landscape Architect at least three (3) days in advance of scheduled coverage test). Owner's representative will determine if the water coverage and dispersion is complete and adequate. Readjust

heads and/or head locations as necessary or directed to achieve proper coverage. After landscape finish grading is accomplished, install heads to finished grade in lawn and shrub areas and backfill with clean topsoil so head is stabilized and no lateral motion is exhibited during operation. Heads shall be set so the tip of the heads are 1/2" above the top of the mulch in planting beds. Heads in the turf areas shall be set flush with the finished grade and not a hazard to pedestrians and/or maintenance machinery. Set sprinkler heads to plumb within 1/16" and a minimum of 4 inches and a maximum of 6 inches from walls, walks and curbs.

3. Sprinkler heads to be spaced so as not to throw water on the buildings, walks or driveways. Heads shall be adjusted as required so that foliage of plants will not obstruct the spray and that the system has 100% coverage.
4. Contractor shall conduct a performance test of the complete system to ensure that all components are functioning properly. Performance test shall consist of operating the system through a complete irrigation cycle per day for two (2) consecutive days. Contractor shall be at the site to monitor the performance test and make any adjustments and corrections as needed during the testing period.
5. All testing shall be at the expense of the Contractor.

3.14 CLEANING AND ADJUSTING

- A. At the completion of the work, all parts of the installation shall be thoroughly cleaned. All equipment, pipe, valves and fittings shall be cleaned of grease, metal cuttings and sludge which may have accumulated by the operation of the system for testing.
- B. Adjust sprinkler heads, valve boxes, and quick coupling valves to grade as required, so that they will not be damaged by mowing operations.
- C. Continue sprinkler coverage adjustment as required by settlement, etc., throughout the guarantee period.
- D. Each control zone shall be operated for a minimum of 5 minutes and all heads checked for consistency of delivering water. Adjustments shall be made to sprinklers that are not consistent to the point that they match the manufacturer's standards. All sprinklers, valves, timing devices or other mechanical or electrical components, which fail to meet these standards, shall be rejected, replaced and tested until they meet the manufacturer's standards.

3.15 ACCEPTANCE AND OPERATION BY OWNER

- A. Upon completion of the work and acceptance by the Owner, the Contractor shall be responsible for the training of the Owner's Representative in the operation of the

system (provide minimum 72 hours written notice in advance of test). The Contractor shall furnish, in addition to the Record Drawings and operational manuals, copies of all available specification sheets and catalog sheets to the Owner's personnel responsible for the operation of the irrigation system. The Contractor shall guarantee all parts and labor for a minimum period of one (1) year from date of acceptance.

- B. Conditions for acceptability of work for start of maintenance by Owner issued by Owner or Owner's Representative shall include but not be limited to:
 - 1. Punch list items complete and approved by Owner or Owner's Representative.
 - 2. Landscape irrigation system complete and in place.
 - 3. Record drawings complete.
 - 4. Maintain installation and watering schedules until all conditions noted above have been completed.

3.16 CLEAN UP

- A. Upon completion of all installation work, Contractor shall remove all leftover materials and equipment from the site in a safe and legal manner.
- B. Contractor shall remove all debris resulting from work of this section.
- C. Contractor shall regrade, lightly compact, and replant around sprinkler heads where necessary to maintain proper vertical positioning in relation to established grade.
- D. Contractor shall fill all depressions and eroded channels with sufficient soil mix to adjust grade to ensure proper drainage. Compact lightly, and replant filled areas in accord with Owner's Representative's requirements.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE:

- A. Perform all work required to complete the planting as described herein and shown on accompanying drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. General Conditions
- B. General Requirements - Division 1

1.03 REFERENCE STANDARDS:

- A. American Joint Committee on Horticultural Nomenclature: 1942 Edition of Standard Plant Names.
- B. American Standard for Nursery Stock (ANSI 260), latest edition, American Association of Nurserymen.

1.04 QUALITY ASSURANCE:

- A. All work shall be performed by skilled personnel within the industry in a workmanlike manner and supervised by an experienced foreman.
- B. The contractor, when required, will submit samples of all trees, for the Landscape Architect and/or Owners approval. When approved, these will be tagged and maintained as representative samples for all future plant materials. Rejected material shall be removed from the site immediately. The Landscape Architect reserves the right to reject any material he deems unsatisfactory.
- C. When required, the contractor shall also submit for approval sufficient quantities of loam, manure, peat moss and fertilizer as to be representative. All samples must be approved by the Landscape Architect before use in the job.

1.05 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver all packaged material in original unopened and undamaged containers bearing manufacturer's label identifying name, weight, analysis and any other pertinent data.
- B. Protect plant material during delivery to prevent damage to root ball and desecration of leaves. Damaged material will be rejected.

1.06 WARRANTY PERIOD AND REPLACEMENT:

- A. All trees and shrubs shall be warranted for one (1) years after Final Acceptance. Plants shall be in full leaf for a minimum of 30 days at the end of the warranty period. Termination of the warranty period will be extended as necessary to comply.
- B. Plants used for replacement shall be of the same kind and size as those originally specified. All work, including materials, labor and equipment used in replacements, shall be at no cost to the owner. Any damage, including ruts in lawn or bed areas, incurred in making replacements, shall be immediately repaired.
- C. Plant material will be replaced once at the owners request and at the end of the twelfth (12th) month. A list of material to be replaced shall be submitted to the Landscape Architect and/or Owner prior to any replacements being made.

1.07 ACCEPTANCE:

- A. Substantial completion and contract close-out shall be in accordance with Division 1.
- B. Final acceptance shall be when the contractor has completed to the Landscape Architect's satisfaction, the final punch list.

1.08 MAINTENANCE:

- A. The contractor shall maintain all plant materials under this contract by watering, cultivating, weeding, spraying and replacing as necessary to keep plants in a vigorous, healthy condition until final acceptance.

PART II PRODUCTS

2.01 MATERIAL:

- A. Plants (general): All plants shall be well-formed No. 1 grade or better nursery stock and shall meet the applicable standards noted herein for nursery stock and shall be subject to rejection by the Landscape Architect. All plants shall remain the property of the contractor until final acceptance.
- B. Ornamental trees: Plants shall be healthy, vigorous, bushy, well-branched, of normal habit of growth for the species, and shall be free from disease, insect eggs and larvae. The specified sizes shall be before pruning, and the plants shall be measured with their branches in normal position.
- C. Shade trees: Shall be healthy, vigorous, full-branches, well-shaped, and shall meet trunk diameter and height requirements of the plant list. Balls shall be firm, neat, slightly tapered and well burlapped. Any tree loose in the ball or

with broken ball at the time of planting will be rejected. Any trees are subject to approval by the Landscape Architect.

- D. Topsoil: Where additional topsoil is needed, it shall be fertile, sandy loam of natural occurrence, free of rubble, stones, lumps and perennial plant root stocks. The presence of noxious weeds will be cause for rejection.
- E. Mulch: Shredded cedar bark.
- F. Compost: GP Soils, Organic Garden Compost as manufactured by GP Soils, Tulsa , Oklahoma, or approved equal.
- G. Fertilizer: Osmocote 18-6-12, or approved equal. To be paid as part of the installed plant cost.
- H. Steel bed Edging: Colmet Steel Bed Edging, 3/16" x 4" steel landscape edging with steel stakes as manufactured by Colmet, Garland, Texas, or approved equal.

2.02 ACCESSORIES:

- A. Tree Wrap: Not used on this project.
- B. Tree Stakes: Duckbill anchor and tension straps by Duckbill Earth Anchors, or approved equal.
- C. Wire, eye bolts: Not used on this project.
- D. Straps for staking: Duckbill anchor and tension straps by Duckbill Earth Anchors, or approved equal.

PART III EXECUTION

3.01 PREPARATION:

- A. Verify grades and conditions prior to accepting any portion of the site from general contractor before commencing with work. Beginning work under this section indicates acceptance of existing site conditions.
- B. All planting beds should have a minimum of 12" of amended topsoil.
- C. Outline all planting beds for approval by the Landscape Architect. Prior to commencing with bed preparation.
- D. Stake all tree locations for approval by the Landscape Architect prior to digging tree pits.

- E. Remove all weeds and grasses from planting beds. If Bermuda grass is present, it shall be eradicated by approved means.
- F. Within approved bed lines prepare soil by roto-tilling two inches (6") of compost over entire bed area to a depth of six inches (12"). Mix with the existing soil on site.
- G. Azaleas and rhododendron shall be planted in 100% pure sphagnum peat moss. Place peat moss to a height of 4" above surrounding bed grade, (12" total depth).
 - 1. Excavate entire area to be planted to a depth of 8" and backfill with peat
 - 2. Peat moss shall be thoroughly wetted with water prior to planting.
 - 3. Scarify root balls so plants will not become root bound.
- H. Position plants and groundcover on prepared beds prior to planting for approval of Landscape Architect.

3.02 INSTALLATION:

- A. Plant in Landscape Architect's approved location, setting plant with top of ball even with top of bed, and compact soil carefully around each plant ball. Water each plant thoroughly with hose to eliminate air pockets. Plants shall be carefully pruned to remove dead or broken branches, and entire bed area shall be hand raked to a smooth, even surface.
- B. Spread an even 3" layer of mulch over entire planting bed.
- C. Shade Trees: Will be planted in tree pits twenty four inches (24") greater in diameter than the size of the ball or root system. Scarify sides and slope pit bottom.
- D. Ornamental Trees: Will be planted in tree pits eighteen inches (18") greater in diameter than the size of the ball or root system. Scarify sides and slope pit bottom.
- E. All trees are to be set so that top of ball is even with finish grade or if poor soil conditions and with the architect's approval 1/4 of the root ball above finish grade.
- F. On all trees the top 6" of backfill shall consist of a 1:1 mixture of compost to soil.
- G. On all trees thoroughly water to eliminate air pocket and future settling.
- H. Around all trees form a circular ring free of any vegetation. For trees 3" and greater in caliper form a 5' diameter ring and for trees less than 3" caliper form a 3'-6" diameter ring. Circle shall be true in form and centered on tree.

- I. Cut all strings and wires, etc. from around the top of the root balls and tree trunks.
- J. Spread an even 3" layer of mulch within all tree rings.
- K. Prune all trees after planting to remove dead and broken branches.
- L. All trees shall be staked with duckbill earth anchors as shown on plan details.
- M. Apply Osmocote at a rate of 1/2 pound per tree and as per the manufacturer's Recommendations for all shrub and groundcover planting beds.

3.03 CLEANING:

- A. During the work, the premises are to be kept neat and orderly at all times. Storage areas for planting and other materials shall be organized so that they, too, are neat and orderly. All trash, including debris from removing weeds or rocks from planting areas, preparing beds, or planting plants, shall be removed from the site daily as the work progresses. All walk and driveway areas shall be kept clean by sweeping or hosing.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE:

- A. Provide and install sodded lawns as indicated on drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. General Requirements

1.03 QUALITY ASSURANCE:

- A. Comply with American Sod Producers Association (ASPA) guideline specifications to sodding.

1.04 DELIVERY, STORAGE AND HANDLING:

- A. Deliver sod on pallets and protect from sun, wind and dehydration prior to installation.
- B. Do not cut or deliver more sod than can be laid within 24 hours.

1.05 SUBMITTALS:

- A. Submit name, address and phone number of sod supplier.
- B. Manufacturer's label with analysis data on lawn fertilizer.

1.06 MAINTENANCE:

- A. Maintain sod after installation to achieve a well rooted and vigorous growing lawn or until final acceptance, whichever is longer. Sod should be mowed and maintained until final acceptance.

PART 2 - PRODUCTS

2.01 MATERIAL:

- A. Sod shall be of type as indicated on drawings and shall be well rooted, healthy, free of weeds, disease, nematodes, and soil borne insects. Sod shall also be uniform in color, leaf texture, and density.
- B. Fertilizer shall be granular or pellet 13-13-13 or as determined by soil testing.
- C. Water shall be free of substances harmful to sod growth.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine finish surfaces, grades, topsoil quality and depth. Do not start sodding work until unsatisfactory conditions are corrected. Beginning of installation indicates acceptance of existing site conditions.

3.02 PREPARATION:

- A. Loosen topsoil of lawn areas to be planted. Remove existing vegetation, sticks, roots, rubbish, foreign matter and stones over one inch (1") in any dimension from the top two inches (2") of the sod bed. Areas where the finish grade was sat for extended periods of time will need to be tilled or disked to remove vegetation and to loosen compacted soil to 85% maximum density.
- B. Fine grade lawn areas to smooth, even surface with a loose, uniformly fine texture. Float smooth to remove ridges and fill depressions as required to drain.
- C. Finish grade shall be smooth and approximately one inch (1") below curbs, walks and other paved surfaces.
- D. Apply 13-13-13 fertilizer on finish grade prior to sod installation at a rate of eight (8) pounds of product per 1000 square feet.
- E. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding.

3.03 SOD INSTALLATION:

- A. Work within seasonal limitations of the sod type specified. Install sod between April 15 and August 30. Deviation from these dates shall be submitted by the contractor for approval by the owner or the owner's representative before installation.
- B. Large roll sod will be allowed only if netting is removed during the installation of the sod.
- C. Lay sod to form a solid mass tightly-fitted joints. Do not overlay edges. Stagger strips to offset joints in adjacent courses.
- D. Sod shall be placed so that top of sod is flush with adjoining grass areas if any, curbs, walks, and other paved surfaces.
- E. Do not install sod on saturated or frozen soil.

- F. Water sod lightly then roll with a water filled commercial lawn roller to ensure contact with subgrade and to insure a smooth surface free of lumps and depressions.
- G. Immediately following rolling, water sod thoroughly and continue to water after installation to achieve a well rooted and vigorous growing lawn or until final acceptance, whichever is longer. Contractor to provide watering equipment as required for areas not covered by an irrigation system.
- H. Repeat sod rolling as needed after one week to achieve a smooth level surface.
- I. On 3:1 slopes or greater sod shall be secured with sod staples as needed to prevent sod from sloughing off slopes.
- J. Replace dead sod as required prior to final acceptance.

3.04 CLEANING:

- A. During the work, the premises are to be kept neat and orderly at all times. Storage areas for materials shall be organized so that they are neat and orderly. All trash, including debris from removing weeds or rocks from sodded areas, shall be removed from the site daily as the work progresses. All walk and driveway areas shall be kept clean by sweeping or hosing.

END OF SECTION

**SECTION 03100
CONCRETE FORMWORK**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide formwork in accordance with provisions of this Section for cast-in-place concrete shown on the drawings or required by other Sections of these Specifications.
- B. Related work:
 - Section 03210: Steel Reinforcement
 - Section 03300: Cast-in-place Concrete

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Design of formwork is the Contractor's responsibility.
- C. Standards: in addition to complying with pertinent regulations of governmental agencies having jurisdiction, comply with pertinent provisions of ACI 347.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: After the Contractor has received the Owner's Notice to Proceed, submit manufacturer's data and installation instructions for proprietary materials including form coatings, ties, and accessories, and manufactured form systems if used.

PART 2 PRODUCTS

2.01 FORM MATERIALS

- A. Except for metal forms, use new materials. Materials may be reused during progress of the work, provided they are completely cleaned and reconditioned, re-coated for each use, and capable of producing formwork of the required quality.
- B. For footings and foundations, use boards or planks secured to wood or steel stakes, substantially constructed to shapes indicated and to support the required loads.

2.02 FORM TIES

- A. Hold inner and outer forms for vertical concrete together with combination steel ties and spreaders approved by the Owner's Representative:
 - 1. Space ties symmetrically in tiers and rows, each tier plumb from top to bottom and each row level.
 - 2. At horizontal pour lines, locate ties not more than 6" below the pour lines. Tighten after concrete has set and before the next pour is made.
 - 3. For exposed concrete surfaces, provide form ties of removable type with the bolts equipped with permanent plugs and a system approved by the Owner's Representative for fixing the plugs in place.

2.03 DESIGN OF FORMWORK

- A. General:
 - 1. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure.
 - 2. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose.
 - 3. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.
 - 4. Design forms and formwork to include assumed values of live load, dead load, weight of moving equipment operated on the formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of the structure during construction.
 - 5. Provide trussed supports when adequate foundations for shores and struts cannot be secured.
 - 6. Support form materials by structural members spaced sufficiently close to prevent objectionable deflection.
 - 7. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities, and within the allowable tolerances.
 - 8. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints, and provide backup material at joints as required to prevent leakage and prevent fins.
 - 9. Provide camber in formwork as required for anticipated deflections due to weight and pressure of fresh concrete and construction loads.

2.04 EARTH FORMS

- A. Side forms for footings may be omitted, and concrete may be placed directly against excavation only when requested by the Contractor and approved by the Owner's Representative.
- B. When omission of forms is accepted, provide additional concrete 1" on each side of the minimum design profiles and dimensions shown on the drawings.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FORM CONSTRUCTION

- A. General:
 - 1. Construct forms complying with ACI 347 to the exact sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades and level and plumb work in the finished structure.
 - 2. Provide for openings, offsets, keyways, recesses, moldings, reglets, chambers, blocking, screens, bulkheads, anchorages, inserts, and other features as required.
- B. Fabrication:
 - 1. Fabricate forms for easy removal without hammering or prying against concrete surfaces.
 - 2. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces.
 - 3. Kerf wood inserts for forming keyways, reglets, recesses, and the like to prevent swelling and assure ease of removal.
 - 4. Provide top forms for inclined surfaces where so directed by the Owner's Representative.
- C. Forms for exposed concrete:
 - 1. Drill forms to suit ties being used, and to prevent leakage of cement paste around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
 - 2. Provide sharp, clean corners at intersection planes, without visible edges or offsets. Back the joints with extra studs or girts to maintain true, square intersections.
 - 3. Use extra studs, walls and bracing to prevent objectionable bowing of forms between studs, and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.
- D. Corner treatments:
 - 1. Unless shown otherwise, form chamfers with 3/4" x 3/4" strips, accurately formed and surfaced to produce uniformly straight lines and tight edges.
 - 2. Extend terminal edges to required limit, and miter the chamfer strips at changes in direction.
- E. Locate control joints as indicated on the drawings and as approved by the Owner's Representative.
- F. Provisions for other trades:
 - 1. Provide openings in concrete formwork to accommodate work of other trades.
 - 2. Verify size and location of openings, recesses, and chases with the trade

requiring such items.

3. Accurately place and securely support items to be built into the concrete.

3.03 REMOVAL OF FORMS

A. General:

1. Do not disturb or remove forms until the concrete has hardened sufficiently to permit form removal with complete safety.
2. Do not remove shoring until the member has acquired sufficient strength to support its own weight, the load upon it, and the added load of construction.
3. Do not strip floor slabs in less than two days.
4. Do not strip vertical concrete in less than seven days.

B. Finished surfaces:

1. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged, and that corners are true, sharp, and unbroken.
2. Release sleeve nuts or clamps, and pull the form ties neatly.
3. Do not permit steel spreaders, form ties, or other metal to project from, or be visible on, any concrete surface except where so shown on the drawings.
4. Solidly pack form tie holes, rod holes, and similar holes in the concrete. For packing, use the cement grout specified in Section 03300, flushing the holes with water before packing, screeding off flush, and grinding to match adjacent surfaces.

END OF SECTION

**SECTION 03210
STEEL REINFORCEMENT**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide concrete reinforcement where shown on the drawings specified herein, and as needed for a complete and proper installation.
- B. Related Work:
 - Section 03100: Concrete Formwork.
 - Section 03210: Steel Reinforcement.
 - Section 03300: Cast-in-place Concrete.
 - Section 03345: Concrete Finishing.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Comply with pertinent provisions of the following, except as may be modified herein:
 - 1. ACI 318.
 - 2. CRSI "Manual of Standard Practice."

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: After the Contractor has received the Owner's Notice to proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing details of bars, anchors, and other items, if any, provided under this Section.

1.04 PRODUCT HANDLING

- A. Delivery and Storage:
 - 1. Use necessary precautions to maintain identification.
 - 2. Store in a manner to prevent excessive rusting and fouling with dirt, grease, and other bond-breaking coatings.

PART 2 - PRODUCTS

2.01 REINFORCEMENT MATERIALS AND ACCESSORIES

- A. Bars:
 - 1. Provide deformed billet steel bars complying with ASTM A615. Using grades shown on the Drawings.
- B. Steel Wire:
 - 1. Comply with ASTM A82.
 - 2. For tie wire, comply with Fed Spec QQ-W-461, annealed steel, black, 16 gage minimum.
- C. Welded Wire Fabric:
 - 1. Provide welded steel, complying with ASTM A185, 6" x 6" x 10" x 10".
- D. Bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcement in place:
 - 1. Use wire bar type supports complying with CRSI recommendations, unless otherwise shown on the Drawings.
 - 2. Do not use wood, brick, or other non-complying material.
 - 3. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.02 FABRICATION

- A. General:
 - 1. Fabricate reinforcing bars to conform to the required shapes and dimensions, with fabrication tolerances complying with the CRSI Manual.
 - 2. In case of fabricating errors, do not straighten or re-bend reinforcement in a manner that will weaken or injure the material.
 - 3. Reinforcement with any of the following defects will not be acceptable:
 - a. Bar lengths, depths, and/or bends exceeding the specified fabrication tolerances.
 - b. Bends and/or kinks not shown on the Drawings.
 - c. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. General:
 - 1. Comply with the specified standards for detail and method of placing reinforcement and supports, except as may be modified herein.
 - 2. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
 - 3. Position, support, and secure reinforcement against displacement by formwork, construction, and concrete placing operations.
 - 4. Locate and support reinforcement by metal chairs, runners, bolsters, spacers, and hangers, as required.
 - 5. Place reinforcement to obtain minimum coverage's for concrete protection.
 - 6. Arrange, space, and securely tie bars and bar supports together with the specified tie wire.
 - 7. Set wire ties so twisted ends are directed away from exposed concrete surfaces.
- B. Install welded wire fabric in as long lengths as practicable, lapping adjoining pieces at least one full mesh.
- C. Provide sufficient numbers of supports, and of strength to carry the reinforcement.
- D. Do not place reinforcing bars more than 2" beyond last leg of any continuous bar support.
- E. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

3.03 SPLICES

- A. Lap Splices:
 - 1. Tie securely with the specified wire to prevent displacement of splices during placement of concrete.
- B. Splice Devices:
 - 1. Obtain the Owner's Representative approval prior to using splice devices.
 - 2. Install in accordance with manufacturer's written instructions.
 - 3. Splice in a manner developing at least 125% of the yielding strength of the bar.
- C. Welding:
 - 1. Perform in accordance with AWS D1.4-79.
- D. Do not splice bars except at locations shown on the drawings, or as otherwise specifically approved by the Owner's Representative.

3.04 TESTING

- A. Samples:
 - 1. Materials to be sampled at the building site shall have been delivered thereto at least 72 hours before it is needed.

END OF SECTION

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The extent of cast-in-place concrete is shown on drawings.
- B. Related work specified elsewhere:
 - Section 03100: Concrete Formwork.
 - Section 03210: Steel Reinforcement.
 - Section 03345: Concrete Finishing.

1.02 TESTING

- A. Owner to employ and pay for an independent testing laboratory, to perform specified testing.
- B. Tests required for aggregate:
 - 1. Test for conformance to ASTM C-33.
 - 2. Make one test for each 100 cubic yards of fine aggregate.
 - 3. Make one test for each 250 cubic yards of coarse aggregate.
- C. Tests required for concrete:
 - 1. Make and store test specimens in conformance with ASTM C-31.
 - 2. Compressive strength tests: ASTM C-39:
 - a. Make four (4) cylinders for each test.
 - b. Break two cylinders at seven days and two at 28 days unless otherwise directed by Owner's Representative.
 - 3. Make one compressive strength test for each day's placement or each 50 cubic yards of concrete of each specified strength.
 - 4. If test strength of concrete does not comply with strength requirements of these specifications and is sufficiently low that, in opinion of Owner's Representative, performance of structure is jeopardized, the Owner's Representative may require that drilled core test specimens be cut from structure at location at which the questionable concrete was placed. Cores shall be secured and tested in accordance with ASTM C-42. If results of these tests show that actual strength of concrete is sufficiently low as to jeopardize performance of structure, the Owner's Representative may require that concrete be removed from structure, and replaced at no additional cost to Owner.
 - 5. Perform slump test at point of placement immediately prior to placing concrete. Test in accordance with ASTM C-143.
 - 6. Test for percentage of entrained air in accordance with ASTM C-231 at time of slump testing.
- D. Inspection of batch plant:

1. Batch plant operation will be inspected as required to insure that concrete delivered to the job complies with specifications. Testing laboratory engaged by Contractor will provide this service as directed by Owner's Representative.
2. Plant inspection reports shall include:
 - a. Location of plant.
 - b. Job location.
 - c. Concrete design mix number and strength.
 - d. Concrete design proportion, source, type and amount of cement, aggregates and admixtures used, surface water added and total water used.
 - e. Slump.
 - f. Air content.
 - g. Temperature of heated concrete.
 - h. Capacity and condition of mixing truck.
 - i. Percent of capacity loaded.
 - j. Condition of batching installation.
 - k. Condition of heating installation.
 - l. Period of inspection.
 - m. Number and sizes of batches delivered.

1.04 REFERENCE STANDARDS

- A. The following codes and manuals form a part of this specification:
 1. Standard Specifications for Structural Concrete for Buildings (ACI 301-72; Rev 81).
 2. Recommended Practice for Selecting Proportions for Concrete (ACI 211-77).
 3. Concrete production facilities shall have a current "National Ready Mixed Concrete Association Certificate of Conformance for Concrete Production Facilities".
 4. Building Code Requirements for Reinforced Concrete (ACI 318-77).

1.05 SUBMITTALS

- A. Submit proposed mix design to Owner's Representative for review. Include certification required in admixture specification.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cement: Portland Cement (ASTM C-150, Type I). Use high early strength Portland Cement (Serial designation C-150, Type III) where specified and elsewhere at Contractor's option and at no additional cost to Owner.
- B. Fine aggregate: Sand particles shall be coarse, sharp, clean and conforming to ASTM C-33.
- C. Coarse aggregate:

1. Crushed limestone conforming to ASTM C-33 for normal weight concrete.
 2. Light weight conforming to ASTM C-330 for semi-light weight concrete.
Minimum Fsp (splitting ratio) of 6.0.
- D. Water: Clean and free from injurious amounts of oil, acids, alkalines, organic materials or other deleterious substances.
- E. Admixtures:
1. Water reducing admixture: ASTM C-494, Type A, containing no more chloride ions than are present in municipal drinking water.
 - a. Acceptable products:
 - (1) Eucone WR-75; The Euclid Chemical Co.
 - (2) Pozzolith ZOON; Master Builders.
 - (3) Plastocrete 160; Sika Chemical Corp.
 2. Water reducing, retarding admixture: ASTM C 494, Type D, containing no more chloride ions than are present in municipal drinking water.
 - a. Acceptable products:
 - (1) Eucone Retarder-75; Euclid Chemical Co.
 - (2) Pozzolith 100XR; Master Builders.
 - (3) Plastiment; Sika Chemical Co.
 3. High range water reducing admixture (Superplasticizer): ASTM C-494, Type F or G, containing no more chloride ions than are present in municipal drinking water.
 - a. Acceptable products:
 - (1) Eucon 37; The Euclid Chemical Co.
 - (2) Sikament; Sika Chemical Corp.
 4. Non-chloride accelerator: ASTM C-494, Type C or E, containing no more chloride ions than are present in municipal drinking water.
 - a. Acceptable products:
 - (1) Accelguard 80; The Euclid Chemical Co.
 - (2) Darex Set Accelerator; W. R. Grace.
 5. Air entraining admixture: ASTM C-260.
 6. No calcium chloride or admixtures containing more than 0.1% chloride ions will be permitted.
 7. Written certification of conformance to specified requirements and the chloride ion content will be required from admixture manufacturer prior to mix design review.
- F. Curing compound: ASTM C-309 for cast-in-place slabs, except those receiving concrete staining products cementitious topping, or tennis court surfacing. No concrete treatment shall be used without Owner's Representative's approval.
1. Acceptable products:
 - a. West Concrete Floor Treatment.
 - b. Guardian Clear Bond.
 - c. TRI-KOTE Concrete Treatment.
 - d. Horn Clear Seal.
 - e. Master Builders Master Seal.
 - f. Conspec No. 1" by Conspec Marketing & Mfg. Co.

- G. Furnish concrete in accordance with ASTM C-94, Alternate No. 3, Specification for Ready Mixed Concrete. Design concrete in accordance with ACI Standard Recommended Practice for the Design of Concrete Mixes (ACI 211-77) to produce strength of concrete with slumps and maximum sizes of coarse aggregate specified. Design concrete so the concrete materials will not segregate and excessive bleeding will not occur.
- H. Reinforcing: As specified in Division 3.
- I. Floor underlayment: Ardex K-15; Ardex, Inc., 630 Stoops Ferry Road, Corapolis, Pa. 15108, (412) 264-4240.

Note: Curing agents or hardeners are not allowed for tennis courts, sport courts, playground or spraygrounds surfaces to receive color finish.

2.02 CONCRETE MIX REQUIREMENTS

- A. Use a testing laboratory acceptable to Owner's Representative for preparing and reporting proposed mix designs. Submit written reports to Owner's Representative of each proposed mix at least 28 days prior to start of work. Do not place concrete until mixes have been reviewed and approved by Owner's Representative. The specified minimum strengths are to be exceeded in accordance with Paragraph 4.3 of Building Code Requirements for Reinforced Concrete (ACI 318-83).
- B. Minimum compressive strength 28 day: 3000 psi footings; 3500 psi, all other unless specifically called out on the plans.
- C. Minimum cement content: 5 sacks per cu. yd. for footings; 6 sacks per cu. yd. for other unless otherwise approved in submittals.
- D. Slump: 4" plus or minus 1".
- E. Maximum size aggregate: Generally 3/4".

2.03 WATER STOP

- A. Acceptable manufacturers: Williams Products, Inc.
- B. Flat, natural rubber, dumbbell type, 5" wide, 1/4" minimum center thickness, 3500 psi minimum tensile strength, 525% minimum elongation to break.

2.04 COLORING

- A. NOT USED

PART 3 - EXECUTION

3.01 PLACING

- A. Notify Owner's Representative of intent to pour at least twenty-four (24) hours prior to placing concrete.
- B. Before placing concrete, clean equipment for mixing and transporting concrete. Remove debris and ice from spaces to be occupied by concrete. Forms to be removed shall be thoroughly wetted or oiled. Sprinkle sub-grade sufficiently to prevent suction, where waterproof membrane is not required. Remove excess water from place of deposit. Reinforcement, forms, membrane, fillers and ground with which concrete is to come in contact shall be free from frost. Do not deposit concrete during rain unless it is adequately protected. In that case, be prepared to protect newly placed concrete from rain until it has hardened sufficiently so that it will not be damaged. Minimum of 2 hours between placing columns and floors.
- C. Before placing concrete, verify installation of all reinforcements, sleeves, waterproof membrane, forms for openings, fill materials, anchors and items related to mechanical, plumbing and electrical trades.
- D. Convey from mixer to place of final deposit by methods which will prevent separation or loss of materials. Do not permit concrete to drop freely any distance greater than 4 feet. Where longer drops are necessary, use a chute, tremie or other approved conveyance to assist concrete into place without separation. Chutes shall be metal and have maximum slope of 1 vertical to 2 horizontal; minimum of 1 vertical to 3 horizontal. Chutes greater than 20 feet long will not be permitted.
- E. Place concrete at a rate to keep concrete plastic and flowing readily into spaces between bars. Concrete temperature shall be 60-80°F. No concrete that is partially hardened or has been contaminated by foreign materials shall be deposited, nor shall re-tempered concrete be used.
- F. Thoroughly compact concrete by suitable means during placing and work around reinforcement and into corners and recesses of forms. Use vibrators under competent supervision to aid in placement of concrete. Insert vibrators and withdraw vertically at 18" to 30" spacing for 5 to 15 seconds duration.

3.02 HOT WEATHER CONCRETING

- A. Conform to ACI 305 when concreting during hot weather.

3.03 COLD WEATHER CONCRETING

- A. Conform to ACI 306 when concreting during cold weather.

3.04 FINISH FOR FORMED CONCRETE

- A. After removal of forms, if any honeycomb places or rock pockets exist, notify Owner's Representative and repair in accordance with his instructions. In general, remove all loose material, wet surface thoroughly, and fill all voids with a stiff mixture of one part cement to two parts sand. In exposed construction, mix white Portland Cement with standard to blend patch with surrounding surface.
- B. On exposed concrete, smooth off joint marks and fins and leave surface smooth, dense and free from honeycomb, prominent grain markings and bulges or depressions more than 3/16" in 4'.
- C. Cork floated finish (on exposed concrete, except omit at round columns):
 - 1. Remove forms at an early stage, within 2 to 3 days of placement where possible. Remove ties. Remove all burrs and fins.
 - 2. Mix one part Portland Cement and one part fine sand with sufficient water to produce a stiff mortar. Dampen wall surface. Apply mortar with firm rubber float or with trowel, filling all surface voids. Compress mortar into voids using a slow-speed grinder or stone. If the mortar surface dries too rapidly to permit proper compaction and finishing, apply a small amount of water with a fog-sprayer. Produce the final texture with a cork float.

3.05 FINISH FOR SLABS

- A. After suitable bulkheads, screens and, if specified, jointing materials have been positioned, concrete shall be placed continuously between construction joints, beginning at a bulkhead edge form or corner. Place each batch into the edge of previously placed concrete to avoid stone pockets and segregations. If there is a delay in casting, thoroughly spade concrete placed after the delay and consolidate at edge of that previously placed to avoid cold joints. Distribute concrete by shovels and consolidate by other suitable means. Bring concrete to correct level with a wood straightedge and strike off. Do not use wood bullfloats or darbies to smooth the surface.
- B. Roughen slabs to receive toppings with stiff brushes or rakes before the final set.
- C. After concrete has been properly placed, struck off and darbied or bullfloated, it shall not be worked until ready for floating. The off time between darbying and power floating may vary from 2 to 8 hours or more depending on the weather conditions, concrete temperature and concrete mixture. Begin power floating when water sheen has disappeared and mix has stiffened sufficiently that weight of a man standing on it leaves only a slight imprint on surface. If two power floating operations are necessary to bring surface to desired state, allow concrete to stiffen or become harder before beginning second floating operation.

- D. Float finish: After power floating is complete, use wood float by hand to tighten the surface and achieve a medium coarse finish. Hand wood float in a circular motion. Float sufficiently to remove cement paste from surface.
- E. Trowel finish: Both power and hand troweling shall be required. Begin power troweling as soon as little or no cement paste clings to blades. Continue troweling until surface is dense, smooth and free of all minor blemishes, such as trowel marks.
 - 1. Final hand troweling shall be required to remove slight imperfections left by troweling machines and to bring surface to a dense, smooth polished finish. Final hand troweling shall be continued until a ringing sound is heard as trowel passes over surface.
- F. Give platforms and steps a light broom finish following sufficient troweling to seal the surface and remove all minor blemishes such as trowel marks.
- G. Pitch all slabs to drain as indicated on drawings; finish exposed slab edges; stair nosings with 1/2" round radius.
- H. Finishes shall be true to planes to match requirements of Section 02514-3.01-C. If variations greater than this exist, the Owner's Representative may direct contractor to grind floor to bring surface within the requirements. Grind as soon as possible, preferably within three (3) days, but not without Owner's Representative's direction and not until concrete is sufficiently strong to prevent dislodging coarse aggregate particles. Grinding will be considered only where slabs will be covered by finish materials. Patching of low spots will not be permitted.
 - 1. Sprinkling of dry cement or a mixture of dry cement and sand on the surface of fresh concrete to absorb water or to stiffen the mix will not be permitted during any stage of floor construction. If bleeding is excessive, remove by dragging hose just ahead of floating operation.

3.06 CURING

- A. Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures. Maintain without drying at a relatively constant temperature for the period of time necessary for hydration of cement and proper hardening of concrete.
- B. Initial curing shall immediately follow finishing operation. Keep concrete continuously moist at least overnight.
 - 1. On slabs, use one of the following:
 - a. Ponding or continuous sprinkling.
 - b. Absorptive mat or fabric kept continuously wet.
 - c. Sand or other covering kept continuously wet.
- C. Immediately following initial curing and before concrete has dried, additional curing shall be accomplished by one of the following materials or methods:
 - 1. Continuing the method used in initial curing.

2. Waterproof paper conforming to "Specifications for Waterproof Paper for Curing Concrete" (ASTM C-171).
 3. Other moisture-retaining coverings approved.
- D. Continue final curing until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of air in contact with concrete is above 50°F has totaled seven (7) days. Prevent rapid drying at end of curing period.
- E. Excessive temperature changes: Changes in temperature of concrete shall be as uniform as possible and shall not exceed 5 Deg. F in any one (1) hour or 50 Deg. F in any twenty-four (24) hour period.
- F. Steel forms heated by sun and all wood forms in contact with concrete during final curing period shall be kept wet. If forms are to be removed during curing period, immediately employ one of above curing materials or methods. Continue such curing for remainder of curing period.
- G. On completion of construction, clean all exposed slabs and apply a coat of curing compound at rate of 600 sq. ft. per gallon.

3.07 LEVELING EXISTING SLABS

- A. Mix floor underlayment with water and apply to existing slab in accordance with manufacturer's instructions. Level floor to a tolerance of 1/8" in ten feet in any direction.

END OF SECTION

**SECTION 03345
CONCRETE FINISHING**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: provide finishes on cast-in-place concrete as called for on the drawings, specified herein, and needed for a complete and proper installation.
- B. Related work:
Section 03300: Cast-in-place Concrete

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: After the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this section.
 - 2. Manufacturer's recommended installation procedures which, when approved by the Owner's Representative, will become the basis for accepting or rejecting actual installation procedures used on the work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General:
 - 1. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until conditions are correct.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until conditions are correct.

3.02 FINISHING SLABS

- A. Definition of Finishing Tolerances:
 - 1. Class “B”: True plane within tolerances described in Section 02514-3.01-C as determined by a ten foot straightedge placed anywhere on the slab in any direction.
 - 2. Unless otherwise directed by the Owner's Representative, provide the texturing in one direction only.
 - 3. Provide “medium” texturing as directed by the Owner's Representative or otherwise called for on the drawings.

3.03 CURING AND PROTECTION

- A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures, and mechanical injury.
- B. Temperature, Wind, and Humidity:
 - 1. Cold Weather:
 - a. When the mean daily temperature outdoors is less than 40 degrees F, maintain the temperature of the concrete between 50 degrees F and 70 degrees F for the required curing period.
 - b. When necessary, provide proper and adequate heating system capable of maintaining the required heat without injury due to concentration of heat.
 - c. Do not use combustion heaters during the first 24 hours unless precautions are taken to prevent exposure of the concrete to exhaust gases which contain carbon dioxide.
 - 2. Hot Weather: When necessary, provide wind breaks, fog spraying, shading, sprinkling, ponding, or wet covering with a light colored material, applying as quickly as concrete hardening and finishing operations will allow.
 - 3. Rate of temperature change: Keep the temperature of the air immediately adjacent to the concrete during and immediately following the curing period as uniform as possible and not exceeding a change of 5 degrees F in any one hour period, or 50 degrees F in any 24 hour period.
- C. Protection From Mechanical Injury:
 - 1. During the curing period, protect the concrete from damaging mechanical disturbances such as heavy shock, load stresses, and excessive vibration.
 - 2. Protect finished concrete surfaces from damage from construction equipment, materials, and methods, by application of curing procedures, and by rain and running water.
 - 3. Do not load self-supporting structures in such a way as to over stress the concrete.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A. Provide and install all concrete masonry, complete with all necessary accessories, as indicated on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Reinforcement - Section 03200
- B. Cast-in-Place Concrete - Section 03300
- C. Standard Steel Doors and Frames - Section 08110
- D. Divisions 15 and 16

1.03 REFERENCED STANDARDS

- A. ASTM C90 "Specification for Hollow Load-Bearing Concrete Masonry Units"
- B. ASTM C109 "Standard Test Method for Compressive Strength of Hydraulic Cement Mortars"
- C. ASTM C270 "Specification for Mortar for Unit Masonry"
- D. ASTM C476 "Specification for Grout for Masonry"
- E. PCA "Concrete Masonry Handbook"
- F. ACI, "ACI Manual of Concrete Practice"
- G. IMIAC "Recommended Practices and Guide Specifications for Cold Weather Masonry Construction"
- H. NCMA "Manual of Facts on Concrete Masonry"
- I. TCA "Handbook for Ceramic Tile Installation"

1.04 TESTING

- A. Testing of Masonry Mortar and Grout as specified in this section shall be arranged by the Contractor.
- B. Masonry Mortar and Grout shall be sampled, handled and tested in strict accordance with the Referenced Standard ASTM C109.
- C. The following information shall be recorded concerning each sampling by the Testing Technician:
 - 1. Name of Technician taking sample.
 - 2. Date and time of sampling.
 - 3. Air temperature and weather condition at time of sampling.
 - 4. Design compressive strength of Mortar or Grout being sampled.
 - 5. Specific location in structure in which the Mortar or Grout is placed after sampling.
- D. Tests shall be performed for each Mortar and Grout Sampling to determine the following:
 - 1. Mortar or Grout temperature at time of sampling.
 - 2. Mortar or Grout Slump.

3. Compressive Strength of Test Cylinders in the following quantities at the following increments from the date of sampling:
 - a. One test at 7 days
 - b. One test at 28 days
 - c. One specimen shall be retained in reserve for 90 days from the date of sampling for subsequent testing if required by the Architect.
- E. The Testing Laboratory shall prepare a report recording the information required in items C. and D. above and mail the report directly to the Owner, Architect and Contractor the day of the compressive tests.
- F. Four cubes shall be made for each test. Perform a minimum of one test per day for each day that mortar and/or Grout is placed.
- G. Mortar and Grout to be tested shall be randomly selected by the Testing Technician without direction from the Contractor or material supplier.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. CMU: Concrete Masonry Units shall conform to Referenced Standard ASTM C90, Grade N, Normal-weight Aggregate, Type I, Modular Units with Dry-Block integral water-repellent as manufactured by Grace in sizes and shapes indicated on the Drawings with surface finish as follows:
 1. Exterior Split Face masonry Unites with integral color.
 2. Exterior smooth masonry units with tight surface texture and medium smooth surface graining.
 3. Masonry Unit Colors shall be as selected by the Architect from the manufacturer's complete standard color line.

2.02 MORTAR

- A. Mortar shall conform to ASTM C270, Type S, with minimum compressive strength of 1,800 psi at 28 days.

2.03 GROUT

- A. Grout shall conform to ASTM C476, with minimum compressive strength of 2,000 psi at 28 days.

2.04 REINFORCEMENT

- A. Wire Reinforcement: Standard weight Dur-O-Wal Truss, galvanized, with prefabricated corners and tees as manufactured by Dur-O-Wal, or equal. Truss width shall be 2" less than wall thickness.
- B. Bar Reinforcement: As specified in Section 03200 - Concrete Reinforcement.
- C. Horizontal Bar Reinforcement Positioner: AA 234, hot dipped galvanized, as manufactured by AA Wire Products Company, or approved equal

2.05 MASONRY FLASHING

- A. Perm-A-Barrier and Perm-A-Barrier Primer, as manufactured by Grace Construction Products, or equal.

2.06 PREMOLDED CONTROL JOINT

- A. AA 1100 Titewall, as manufactured by AA Wire Products Company, or approved equal.

2.07 VENEER ANCHORS

- A. AA401CE screw-on anchor with AA400 Flex-O-Lok tie, hot dipped galvanized, as manufactured by AA Wire Products Company, or approved equal. Provide tie depth required to extend a minimum of 2½" into masonry.

2.08 LATEX MORTAR ADDITIVE

- A. Acrylbond, as manufactured by TEC Incorporated.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Manufacture, prepare, install, protect and clean all Unit Masonry Products specified herein in strict accordance with applicable requirements of Referenced Standards and Manufacturer's Written Specifications.
- B. Install all Masonry accessories in strict accordance with manufacturer's written specification.
- C. Prior to initiating masonry construction, verify that existing work on which masonry is to be constructed is properly installed to lines and levels indicated on the drawings and items to be provided by other trades are properly placed.

3.02 SUPPLEMENTAL REQUIREMENTS

- A. Install all concrete masonry in running bond pattern with uniform width vertical and horizontal concave joints. Course one unit and one joint vertically to equal 8". Course one full unit and one joint horizontally to equal 16". Install in true horizontal and plumb vertical alignment.
- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting courses on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
- C. Fully bond intersections, and external and internal corners.
- D. Do not shift or tap masonry units after mortar has taken initial set. Where

- adjustment must be made, remove mortar and replace.
- E. Perform job site cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.
 - F. Install reinforced unit masonry lintels over openings. Unless indicated otherwise on the Drawings, construct lintels using #5 bar reinforcement top and bottom of grout filled cell supported at both sides of opening with grout filled cell with one #5 vertically. Use reinforcing bars of one piece lengths only. Place and consolidate grout fill without disturbing reinforcing. Allow lintels to reach sufficient tensile strength before removing temporary supports.
 - G. Provide temporary brace at sill and install metal door frames true and plumb with masonry construction. Bed anchors of metal door frames into masonry joints as recommended by frame manufacturer. Reinforce, with one #5 vertical Reinforcement Bar, masonry cell adjacent to metal door frame and grout solid as specified herein. Block joint between frame and masonry, maintaining appropriate clearance for subsequent sealant joint assembly, and fill door frame jambs solid with grout.
 - H. Cut and closely fit masonry as required for penetrations, anchors, plates and other items to be built into masonry.
 - I. Install Horizontal Reinforcement at 16" on center vertically, in the first and second joint below the top of walls and in the first and second joint above and below openings. Extend reinforcement a minimum of 24" beyond the edge of openings. Install prefabricated reinforcement corners and/or tees at each mortar joint of masonry corners and intersections. Terminate all Horizontal Reinforcement at masonry control joints.
 - J. Reinforce Bond Beams and Pilasters as indicated on drawings and specified herein. Support Horizontal Bar Reinforcement with Horizontal Bar Reinforcement Positioner. Position vertical Bar Reinforcement within ½" of location indicated on the drawing or centered in Masonry Unit cell if not specifically located. Do not extend Bar Reinforcement across Masonry Control Joint unless noted otherwise on the Drawings.
 - K. Provide cleanout opening at bottom of each Masonry Unit Cell to be reinforced by cutting interior face of base cell. Clean all mortar droppings and debris from vertical cell and secure in proper location all vertical Bar Reinforcement. Reseal opening with masonry unit face shell. Install shoring and/or bracing if required to secure face cell prior to Grout installation.
 - L. Install Grout in all Vertical and Horizontal cells containing Bar Reinforcement. Do not place Grout until entire portion of wall to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Place grout in lifts not exceeding 4 feet vertically and rod or vibrate each grout lift during placement to ensure complete consolidation into cell. Allow not less than 30 minutes nor more than 60 minutes between placement of consecutive grout lifts of a given pour.
 - M. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate

evidence of replacement.

- N. During the tooling of joints, enlarge voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds where required.
- O. Clean exposed concrete masonry by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings.
- P. Coordinate mechanical duct penetrations to avoid vertical reinforcement indicated on the drawings.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide metal fabrications as shown.

1.02 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the following standards:
 - 1. City of Oklahoma City Standards and Specifications.
 - 2. American Institute of Steel Construction, (AISC).
 - 3. American Welding Society, (AWS).
 - 4. American Society for Testing and Materials, (ASTM).
 - 5. National Association of Architectural Metal Manufacturers, (NAAMM)
- B. Structural steel: Design, details, fabrication, and erection shall comply with American Institute of Steel Construction (AISC) standards:
 - 1. Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings.
 - 2. Code of Standard Practice for Steel Buildings and Bridges.
- C. Welding: Comply with American Welding Society (AWS) Structural Welding Code D1.1. Qualify welding procedures, welders, and welding operations in accordance with AWS Standard Qualification Procedure.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle metal fabrication items to prevent damage and deterioration.
- B. Stack assembled items off the ground.

1.04 PROJECT CONDITIONS

- A. Coordinate metal fabrications work with trades furnishing items which will attach to members for proper positioning.
- B. Provide sleeves, anchors, inserts, clips and other items furnished under this section and built-in with work of other trades.
- C. No work shall be fabricated until shop drawings for the work have been reviewed and accepted.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Metal surfaces: Provide materials exposed to view smooth and free of pitting, seam marks, roller marks, rolled trade names and roughness.
- B. Steel pipe: ASTM A 53, Grade A, Schedule 40, standard finish.
- C. Fasteners: Provided hot-dip galvanized or stainless steel fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- D. Paint: Metal primer paint: Standard rust inhibitive primer to be approved by Owner's Representative.

2.02 FABRICATION

- A. Fabricate work in accordance with reviewed and accepted shop drawings and referenced standards.
- B. Weld shop connections, except as otherwise indicated. Grind exposed welds smooth.
- C. Provide joints and intersections tight fitting and securely fastened.
- D. Provide metal fabrications work square, plumb, straight, and within allowable tolerances.
- E. Drill or punch holes required for attachment of other work and bolted connections. Burned holes not acceptable.
- F. Bend or form pipe and other members to continuous and true curves, with joints neatly fastened and assembled.
- G. Provide for anchorage of type required, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- H. Preassemble items in shop to greatest extent possible to minimize field fitting and assembly.
- I. Shop painting:
 - 1. Thoroughly clean ferrous metals. Remove all rust, dirt, and other substances that would impair adherence of paint.
 - 2. Prime ferrous metals. Apply 2 shop coats to parts of items which will be inaccessible after assembly. Provide minimum 2.0 mil dry film thickness for each coat.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect substrate, field measure, and verify installation conditions.

3.02 PREPARATION

- A. Provide sleeves and anchorages which are built into concrete or masonry construction. Furnish templates, setting drawings, and instructions for installation of sleeves and anchorages.
- B. Set hardware that is shop installed.

3.03 INSTALLATION

- A. Assemble and install metal fabrications in accordance with final shop drawings.
- B. Perform fitting required for installation. Set the work accurately in location, alignment, and elevation free of rack, measured from established lines and levels. Assembled metal fabrications shall be firm, rigid, free of rattle, and provide maximum protection against tampering and vandalism.
- C. Fit exposed connections accurately together to provide flush, tight, hairline joints.
- D. Adjust handrails and railings before securing in place to ensure proper matching at butting joints and proper alignment throughout their length. Space posts as indicated. Plumb posts in each direction.

3.04 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from metal fabrications work.
- B. Upon completion of installation, clean factory finished metal fabrication items in accordance with manufacturer's cleaning instructions. Exercise care to avoid damage to the finish coating.

3.05 METAL FABRICATIONS SCHEDULE

- A. Refer to plans.

END OF SECTION

**SECTION 07900
SEALANTS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The general provisions of the Contract, including Standard Requirements for Contract Work, Special Provisions and General Requirements, apply to the work specified in this Section.

1.02 SCOPE

- A. Work under this Section consists of furnishing everything necessary for and incidental to the execution and completion of all sealant work, as indicated on the Drawings and specified herein.

1.03 DESCRIPTION OF WORK

- A. The extent of sealant work is indicated on the Drawings.
- B. The required applications of sealants includes, but are not necessarily limited to the following general locations:
 - 1. New Sidewalk Expansion Joints.
 - 2. Between Courts and Fence Bands.

1.04 QUALITY ASSURANCE

- A. Obtain sealant materials only from manufacturers who will, if required, send a qualified technical representative to the project site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.
- B. Installer: A firm with a minimum of five (5) years successful experience in the application of the types of materials required.

1.05 SUBMITTALS

- A. Comply with Section 01340.
- B. Samples, Sealants and Caulking: Submit three (3), 12" long samples of each color required (except black) for each type of sealant or caulking compound exposed to view. Install sample between 2 strips of material similar to or representative of typical surfaces where sealant or compound will be used, held apart to represent typical joint widths. Samples will be reviewed by Owner's Representative for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

- C. Guarantee, Sealants: Submit four (4) copies of written guarantee agreeing to repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data, as an inherent quality of the material for the exposure indicated. Provide guarantee signed by the Installer and Contractor.
- 1. Guarantee period of one (1) year from and after acceptance of the project by the Owner.

1.06 JOB CONDITIONS

- A. Pre-Installation Meeting: At the Contractor's direction, the Installer, Owner and/or the Owner's Representative, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with the Contractor at the project site to review the procedures and time schedule proposed for installation of sealants in coordination with other work. Review each major sealant application required on the project.
- B. Condition of Other Work: The Installer must examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed, and notify the Contractor and the Owner's Representative in writing of conditions detrimental to the proper and timely completion of the work and performance of the sealants. Do not proceed with the sealant work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- C. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitation for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule with Contractor to avoid delay of project.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Colors: Provide manufacturer's standard colors plus thirty (30) additional Fastpak, as selected by Owner's Representative.
- B. Compatibility: Before purchase of each specified sealant, investigate its compatibility with the joint surfaces, joint fillers, sealers and other materials in the system. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation condition, as shown by

manufacturer's published data or certification.

- C. Provide size and shape of preformed sealant units as shown or, if not shown, as recommended by the manufacturer, either in the published data or upon consultation with technical representative.

2.02 SELF-LEVELING JOINT SEALANT

- A. Materials shall be Tremco THC-900 multi-component, chemically curing, self-leveling polyurethane joint sealant as manufactured by Tremco, 10701 Shaker Blvd., Cleveland, Ohio 44104, or approved equal.

2.03 GENERAL PURPOSE SEALANT

- A. Materials shall be Tremco Dymeric, epoxidized polyurethane terpolymer general purpose sealant as manufactured by Tremco, 10701 Shaker Blvd., Cleveland, Ohio 44104, or approved equal.

2.04 MISCELLANEOUS MATERIALS

- A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or caulking compound manufacturer, for the joint surfaces to be cleaned.
- B. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer, for the joint surfaces to be primed or sealed.
- C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.
- D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when joint is compressed.

2.05 APPLICATIONS

- A. Tremco THC-900 Sealant: Provide at all exterior horizontal slab or paving joints.
- B. Tremco Dymeric Sealant: Provide at all other joints noted on the Drawings and around steel handrail base plates where handrail has been raised.

PART 3 - EXECUTION

3.01 JOINT SURFACE PREPARATION

- A. Clean joint surfaces immediately before installation of sealants. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealants. All joint surface preparation shall be in accordance with sealant manufacturer's printed instructions.

3.02 INSTALLATION

- A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- D. Install bond breaker tape wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
- F. Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead.
- G. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces including rough textures such as exposed aggregate panels. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or the sealant/caulking compound.
- H. Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to the adjoining surfaces or finishes.

3.03 CURE AND PROTECTION

- A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendation, to obtain high early bond strength, internal cohesive strength and surface durability.
- B. The Installer shall advise the Contractor of procedures required for the curing and protection of sealants and caulking compounds during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of Owner's acceptance.

END OF SECTION