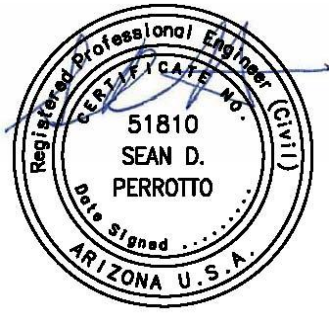
TOWN OF QUARTZSITE
ARIZONA

S SCOTT LANE SEWER LINE EXTENSION

COMBINED
CONTRACT DOCUMENTS
AND
SUPPLEMENTAL TECHNICAL SPECIFICATIONS



BID SET

June 2014

ATKINS

Bidder's Name and Address

TOWN OF QUARTZSITE
S SCOTT LANE SEWER LINE EXTENSION

CONTRACT DOCUMENTS

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SECTION 00020

NOTICE INVITING BIDS

Town of Quartzsite

PROJECT NAME: S SCOTT LANE SEWER LINE EXTENSION

BID DUE DATE: JUNE 19, 2014

BID DUE TIME: 2:00 p.m. ARIZONA TIME

PROJECT DESCRIPTION:

This project consists of the construction of the sewerline extension along S. Scott Lane and includes, but is not limited to, furnishing and installation of the 8-inch sewerline, manholes, lateral stubs for future connection, and trench backfill.

Sealed bids for the project specified will be received by the **Town Clerk's Office, 465 N. Plymouth Avenue, Quartzsite, Arizona, 85346** until the time and date stated. **Bids received by the correct time and date will be opened and read aloud immediately thereafter.**

Bids must be in the actual possession of the Town Clerk's office on or prior to the exact time and date indicated above. Late bids will not be considered under any circumstances.

Bids must be submitted in a sealed envelope with the Project Number and the bidder's name and address clearly indicated on the envelope. All bids must be completed in ink or typewritten on a form to be obtained from the specifications and a complete Invitation for Bid returned along with the offer by the time and date cited above.

Bid documents and specifications will be available for walk-in requests, in electronic format only, through Customer Service at the Town Hall, 465 N. Plymouth Ave., Quartzsite, Arizona, 85346. There will be a $25.00, refundable fee if the disc is returned in working order within 14 days of the Bid Opening.

To download electronic format of bid documents and specifications go to http://www.ci.quartzsite.az.us/RFP_RFQ.html.

For any questions or technical information, please submit in writing to Sean Perrotto at Sean.Perrotto@Atkinsglobal.com.

BONDS:

Bid Bond:	10%
Labor and Material Bond:	100%
Faithful Performance Bond:	100%

Project Completion Date: 60 calendar days after Notice to Proceed.

Town of Quartzsite reserves the right to accept or reject any or all bids or any part thereof and waive informalities deemed in the best interest of the Town.

Pursuant to the Americans with Disabilities Act (ADA), Town of Quartzsite endeavors to ensure the accessibility of all of its programs, facilities and services to all persons with disabilities. If you need an accommodation for this meeting, please contact the Town Clerk's office at (928) 927-4333 at least 24 hours prior to the meeting so that an accommodation may be arranged.

Publication Dates: June 4th, 2014

**** END OF SECTION 00020****

SECTION 00100

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Town of Quartzsite, Arizona, (hereinafter called the "Owner") invites Bids on the form attached hereto**.** All blanks must be appropriately filled in. The Bidder shall also complete and submit a form listing proposed subcontractors as enclosed herein. Any subcontractors proposed to be used on the project but not listed on this form shall not be considered when evaluating the Contractor's qualifications and ability to perform the work. Bids for **S SCOTT LANE SEWER LINE EXTENSION** will be received by the **Town Clerk's office, 465 N. Plymouth Avenue, Quartzsite, Arizona 85346 until 2:00 P.M., Arizona Time, June 19, 2014** where said Bids will be publicly opened and read aloud immediately thereafter. Tabulations of the bids received are posted at The Town of Quartzsite, 465 N. Plymouth Avenue, Quartzsite, AZ 85346.

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. No Bidder may withdraw a Bid within ninety (90) days after the actual date of the opening thereof.

2. PREPARATION OF BID

Each Bid must be submitted on the prescribed Form. Each Document must be submitted with an original signature of the Bidder, as well as all witnesses indicated therein. All blank spaces for Bid prices must be filled in, in ink or typewritten, in both words and figures.

Each Bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, the Bidder's address, and the name and number 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.

3. PRE-BID MEETING

No pre-bid conference will be held for this project.

4. FACSIMILE BIDS OR MODIFICATIONS

No facsimile ("FAX") Bids or bid modifications will be accepted. Any modifications to the Bid shall be made by an authorized representative of the bidding company in person.

5. QUALIFICATIONS OF BIDDER

The Owner may make such investigations as he deems necessary to determine the

qualifications of and the ability of the Bidder to perform the Work, and the Bidder shall furnish the Owner such information and data for this purpose as the Owner may request. The Owner may request that the Bidder provide a list of key people for the project with their related work experience.

The Owner reserves the right to reject any Bid if the evidence submitted by or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein in a timely manner. Conditional Bids will not be accepted.

All Bidders and listed subcontractors must be valid Arizona Licensed Contractors at the time of Bidding, approved by the Arizona State Registrar of Contractors to do the type and amount of work specified in these documents. In accordance with the Arizona State Registrar of Contractors, the Bidder must possess one of the following licenses:

KA-: Dual Engineering (Dual)

or:

A-: General Engineering (Commercial)

Failure of any Bidder to possess all contractors' licenses as listed in the bid packet, at the time of bidding, shall result in the bid being considered non-responsive and not in substantial compliance, and any such bid shall not be considered.

Refer to Section 00420, page 3, item 13.

6. ARITHMETIC DISCREPANCIES IN THE BID

A. For the purpose of the evaluation of Bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the Bid Schedule as submitted by Bidders:

1. Obviously misplaced decimal points will be corrected;

2. In case of discrepancy between unit price and extended price, the unit price will govern;

3. Apparent errors in extension of unit prices will be corrected;

4. Apparent errors in addition of lump sums and extended prices will be corrected; and

5. In case of discrepancy between words and figures in unit prices, the amount shown in words shall govern.

B. For the purpose of Bid evaluation, the Owner will evaluate the bids on the basis of

the unit prices, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above.

7. INCOMPLETE BIDS

Failure to submit a Bid on all items in the Schedule will result in an incomplete Bid and the Bid may be rejected. **UNIT OR LUMP SUM PRICES MUST BE SHOWN FOR EACH BID ITEM WITHIN THE SCHEDULE.**

NOTE: FAILURE TO INDICATE UNIT OR LUMP SUM PRICES IN THE APPROPRIATE COLUMN, WITH THE EXTENSION OF THE PRICES IN THE FAR RIGHT COLUMN, WILL CAUSE THE BID TO BE "NON-RESPONSIVE".

All forms indicated in the Bid Proposal, Section 00300, (Bid Proposal, Bid Schedule, Bid Bond, Statement of Qualifications, No Collusion Affidavit, Hazard Communication Program) must be completely filled out, executed, and submitted with the Bid. Failure to do so will render the bid "non-responsive" and the bid will not be accepted.

8. BID SECURITY

Each Bid must be accompanied by certified check, cashier's check, or a Bid Bond prepared on the form attached hereto or on a similar form acceptable to the Owner, duly executed by the Bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of ten percent (10%) of the Bid. Bid Bonds shall be valid for at least ninety (90) days after the date of the receipt of Bids. Such cash, check or Bid Bond will be returned to all except the three (3) lowest Bidders within fifteen (15) business days after the opening of Bids. The remaining checks, or Bid Bonds will be returned promptly after the Owner and the accepted Bidder have executed the Contract, or if no award has been made within ninety (90) days after the date of the opening of Bids, upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his Bid.

9. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful Bidder, upon his failure or refusal to execute and deliver the Agreement, Bonds, and certificates required within ten (10) calendar days from the date of the Notice of Award, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the difference between his bid and the amount of the contract actually entered into with another party should he not enter into a contract at the bid price and provide the required payment and performance bonds and certificates of insurance. Liquidated damages for failure to enter into the contract shall not exceed the amount of the Bid Bond.

10. SECURITY FOR FAITHFUL PERFORMANCE AND PAYMENT

Simultaneously with his delivery of the executed Contract, the Bidder shall furnish **on the forms provided herein**, in 100% of the amount of this Contract, 1) a surety bond as security for faithful performance of this Contract, and 2) a surety bond as security for the payment of all persons performing labor on the project under this Contract and persons

furnishing materials in connection with this Contract, and 3) a listing of all subcontractors who will be performing or providing more than one-half percent (0.50%) of the contract work, 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, listed on the Treasury Department's most current list (Circular 570 as amended), and authorized to transact business in the State of Arizona.

11. 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 their power-of-attorney.

12. LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable Federal Laws, 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.

13. METHOD OF AWARD

A. The Town will award the Contract on the basis of the Bid or Bids most advantageous to the Town. In determining whether a Bid is most advantageous, in addition to price, the Town may consider the following:

1. The ability, capacity, and skill of the Bidder to perform the Contract or provide the service indicated;

2. Whether the Bidder can perform the Contract or provide the service promptly, and within the time specified without delay or interference;

3. The character, integrity, reputation, judgment, experience, and efficiency of the Bidder;

4. The quality of performance on previous contracts;

5. The previous compliance with laws and ordinances by the Bidder;

6. The financial responsibility of the Bidder to perform under the Contract or provide the service;

7. The limitations of any license the Bidder may be required to possess;

8. The quality, availability, and adaptability of the product or service;

9. The ability of the Bidder to provide future maintenance and/or service;

10. The number and scope of any conditions attached to the Bid; and;

11. The life cycle, maintenance, and performance of the equipment or product being offered.

14. OBLIGATION OF THE 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, if applicable). The failure or omission of the Bidder to examine any form, instrument or document, or site changes due to natural causes, shall in no way relieve any Bidder from any obligation in respect to its Bid. Site changes due to natural causes prior to Bid opening shall not be cause for Bid alteration or withdrawal.

15. TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the Owner, and to complete the work, including Final Acceptance of all phases within **60 calendar days** of the date of the Notice to Proceed. The following construction milestones shall also be met and provide the basis for determining liquidated damages.

The Bidder agrees to pay as liquidated damages, the sum indicated in the following schedule of Liquidated Damages for each consecutive calendar day that each of the Interim Project Milestones listed above is exceeded, plus any additional costs incurred by the Engineer as provided in Article 9 of the General Conditions, during the same period(s). Additionally, Bidder further agrees to pay any fines or penalties levied by any agency having jurisdiction over any portion of the project as a result of actions by the Bidder.

SCHEDULE OF LIQUIDATED DAMAGES		
Original Contract Amount		Daily Charges
From More Than	To and Including	Calendar Day or Fixed Rate
0	25,000	210
25,000	50,000	250
50,000	100,000	280
100,000	500,000	430
500,000	1,000,000	570
1,000,000	2,000,000	710
2,000,000	5,000,000	1,070
5,000,000	10,000,000	1,420
10,000,000	---0---	1,780

16. 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 such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

17. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Plans, Specifications, or other pre-bid documents will be made to any Bidder orally.

Every request for such interpretation shall be in writing addressed to Atkins, Attn: Sean Perrotto at Sean.Perrotto@Atkinsglobal.com and to be given consideration must be received at least nine (9) calendar days prior to the date fixed for the opening of Bids. 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 available to all prospective Bidders, not later than seven (7) calendar days prior to the date fixed for the opening of Bids. Failure of any Bidder to incorporate any such Addendum or interpretation shall not relieve such Bidder from any obligation under his/her Bid as submitted. All Addenda so issued shall become part of the Contract documents.

18. CONFLICT OF INTEREST

Pursuant to A.R.S. Section 38-511, this Contract is subject to cancellation by Buyer if any person significantly involved initiating, negotiating, securing, drafting or creating the Contract on behalf of Town of Quartzsite is, at any time while the Contract is in effect, an employee of any other party to the Contract in any capacity or a consultant to any other party of the Contract with respect to the subject matter of the Contract.

19. NO COLLUSION

The Bidder will be required to complete, notarize and submit as part of this bid package the "No Collusion Affidavit" form, as attached herein. Failure of the Bidder to submit a properly executed affidavit may be grounds for rejection of the Bid.

20. EMPLOYMENT ELIGIBILITY VERIFICATION

The bidder will be required to complete, notarize and submit as part of this bid package the "Employer Verification of Employment Eligibility" form, as attached herein. Failure of the bidder to submit a properly executed verification of eligibility form may be grounds for rejection of the bid.

21. EXAMINATION OF THE PLANS AND SPECIFICATIONS

Each Bid shall be made in accordance with the Plans and Specifications which may be examined at the following locations:

A. Town of Quartzsite Public Works Department, Engineering Division, 580 E. Quail Trail, AZ 85346, 928-927-4561

B. McGraw Hill Construction Dodge, 3315 Central Avenue, Hot Springs, AR, 71913, 871.375.2946, FAX 501.625.3544, nancy_mckeehan@mcgraw-hill.com

C. Colorado River Building Industry Association, 2182 McCulloch Blvd, Suite 3, Lake Havasu City AZ 86403, 928.453.7755, FAX 928.453.3175

D. Northern AZ Home Builders, 1500 E. Cedar Avenue, Suite 86, Flagstaff AZ 86004, 928.779.3071, FAX 928.779.4211

E. Performance Graphics Blueprinting, 4140 Lynn Drive, Suite 107, Fort Mohave, AZ, 86426, 928.763.6860, FAX 928.763.6835

F. Reed Construction Data, 30 Technology Parkway South, Suite 500, Norcross, GA 30092-2912, 800.876.4045, FAX 800.303.8629

G. ISqFt, 3301 N 24th Street, Phoenix, AZ, 85016, 800.364.2059, FAX 800.792.7508, arizonaplanroom@isqft.com

H. Integrated Digital Technologies, LLC, 4633 E Broadway Blvd., Tucson, AZ 85711, PO Box 13086, Tucson AZ,85732, 520.319.0988, FAX, 520.319.1430,www.contractorsplanroom.com, content@idtplans.com

I. Yuma/Southwest Contractors Association, 350 w. 16TH Street, Suite 207, Yuma, AZ 85364, Phone: 928-539-9035, Fax: 928-539-9036

J. Arizona Builders Exchange, 1400 E Indian School Road, Phoenix, AZ, 85014, (480) 227-2620, www.azbex.com

K. Construction Reports.com, 4350 E Camelback Rd, B220, Phoenix, AZ, 85018, (480) 994-0020, FAX 480-994-0030

L. Construction Reporter, 1609 2nd Street NW, Albuquerque, NM, 87102, 505-243-9793, FAX 505-242-4758, www.constructionreporter.com

****END OF SECTION 00100****

This section is intentionally left blank

SECTION 00300

BID PROPOSAL

Town of Quartzsite, Arizona

The undersigned, as bidder, declares that we have received and examined the documents entitled **"S. Scott Lane Sewer Line Extension"** and will contract with the Owner, on the form of Agreement provided herewith, to do everything required for the fulfillment of the contract for the construction of the **" S. Scott Lane Sewer Line Extension"** at the prices and on the terms and conditions herein contained.

We agree that the Contract Documents include Volumes I and II of the Contract Documents as well as the referenced documents.

We agree that the following shall form a part of this proposal and are included herein as our submittal:

		Enclosed
Section	**Title**	✓
00300	**Bid Proposal**	___
00310	**Bid Schedule**	___
00400	**Arizona Statutory Bid Bond**	___
00420	**Bidder's Statement of Qualifications**	___
00430	**Affidavit of Contractor Certifying That There Was No Collusion In Bidding For Contract**	___
00440	**Compliance With Fair Share Policy Program**	___
00450	**Hazard Communication Program**	___
00460	**Employer Verification of Employment Eligibility**	___

We acknowledge that addenda numbers _____ through _____ have been received and have been examined as part of the Contract Documents.

We certify that our proposal is genuine, and not sham or collusive, nor made in the interest or behalf of any undisclosed person, organization, or corporation, and that we have not directly or indirectly induced or solicited any other bidder to put in a sham bid, or directly or indirectly inducted or solicited any other potential bidder to refrain from bidding, and that we have not in any manner sought by collusion to secure an advantage over any other bidder.

The bidder agrees that this Bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written notice of the acceptance of this bid, Bidder shall execute the formal

Contract attached within 10 days and deliver a Performance Bond, Payment Bond, and Certificates of Insurance as required by Paragraph 25 of the General Conditions and the Special Provisions.

We hereby declare that we have visited the site and have carefully examined the Contract Documents relating to the work covered by the above bid or bids.

Enclosed herewith is a certified or cashier's check or bid bond, payable to the Town of Quartzsite, Arizona, in the amount of ten percent (10%) of the total bid. This check or bond is submitted as a guarantee that we will enter into a Contract, and furnish the required bonds in the event a contract is awarded us. The bid security attached, without endorsement, is to become the property of the Town of Quartzsite, Arizona, in the event the Contract and Bonds are not executed within the time set forth, as liquidated damages for delay and additional work caused thereby.

We understand that the Town of Quartzsite, Arizona reserves the right to reject any and/or all bids, or to waive any informalities in any bid, deemed by them to be for the best interests of the Town of Quartzsite, Arizona.

Dated in _____ this _____ day of _____,___.

Respectfully Submitted By:

By: _____

Title: _____

Name of Firm:_____

Address: _____

Phone: _____ FAX: _____

Seal - If bid by a Corporation:

Arizona Contractor's License No.: _____Type: _____

**** END OF SECTION 00300****

SECTION 00310

BID SCHEDULE

TOWN OF QUARTZSITE
S Scott Lane Sewer Line Extension

The Town Council:

Pursuant to request for bids to be opened on the 19th day of June, 2014 at 2:00 p.m., Arizona Time, in the Town Council Chamber's, for the above project, the Contractor proposes to complete work, including furnishing all labor and materials, per the Specifications and Plans at the Following prices.

This Schedule of Items and Prices shall be completed in ink or typed by the Bidding Contractor. In case of discrepancy between the word and figure amount description, the word description shall control extensions.

Prices must be entered for each item and the appropriate subtotal and total blank shall be filled out. Bid prices shall include sales tax and all other applicable taxes and fees.

Bidder agrees to perform all the necessary work to complete the **S SCOTT LANE SEWER LINE EXTENSION.**

The schedule of unit price(s) for BASE BID items of work are included below.

SCHEDULE OF UNIT PRICES
S SCOTT LANE SEWER LINE EXTENSION

	DESCRIPTION	Quantity	UOM	UNIT PRICE	TOTAL COST
1	Mobilization, Bonds and Insurance	1	Lump Sum		
2	Traffic Control	1	Lump Sum		
3	8-Inch PVC (SDR-35) Sewer Line	653	Linear Foot		
4	48-Inch Diameter Manhole	3	Each		
5	Sewer Clean Out	1	Each		
6	Force Account	1	Lump Sum	$5,000	$5,000
	Total Base Bid				

The unit prices for **S SCOTT LANE SEWER LINE EXTENSION,** shall include all labor,

materials, water disposal, bailing, shoring, removal, disposal, overhead, profit, insurance, and all other related costs and work to cover the finished work of the several kinds called for. Changes in the Contract shall be processed in accordance with Article 9 of the General Conditions.

Bidder understands that the Owner reserves the right to reject any or all Bids, or portions thereof, and to waive any informalities in the bidding.

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written notice of the acceptance of this Bid, Bidder shall execute the formal Agreement attached within 10 days and deliver a Performance Bond, Payment Bond, and Certificates of Insurance as required by Paragraph 25 of the General Conditions and the Special Provisions.

The Bid security attached in the sum of $_____(10%) is to become the property of the Owner in the event the Contract and Bond(s) are not executed and provided within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Bidder hereby acknowledges receipt of the following Addenda: ____, ____, _____

RESPECTFULLY SUBMITTED BY:

BY: _____

TITLE: _____

FIRM: _____

ADDRESS: _____

_____

PHONE: _____ FAX _____

Seal - if Bid by a corporation

AZ Contractor's License No: _____

Type _____

**** END OF SECION 00310 ****

SECTION 00400

ARIZONA STATUTORY BID BOND

PURSUANT TO TITLES 28, 34 AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____(hereinafter "Principal"), as Principal, and _____, (hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____, with its principal offices in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto Town of Quartzsite, Arizona, (hereinafter "Obligee"), as Obligee, in the amount of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Obligee for the work described below, for the payment of which sum, the Principal and Surety bind themselves, and their heirs, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for

S Scott Lane Sewer Line Extension

NOW, THEREFORE, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of the proposal and give the bonds and certificates of insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of the contract and for the prompt payment of labor and materials furnished in the prosecution of the contract, or in the event of the failure of the Principal to enter into the contract and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of that section to the extent as if it were copied at length herein.

Witness our hands this _____ day of _____ , _____.

PRINCIPAL SEAL	SURETY SEAL
By: _____	By: _____
	Attorney-in-Fact
Its: _____	_____
	Agency of Record
	_____
	Agency Address

**** END OF SECTION 00400 ****

SECTION 00420

BIDDER'S STATEMENT OF QUALIFICATIONS

The Undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO: Town of Quartzsite, Arizona
465 N. Plymouth Avenue, P.O. Box 2812
Quartzite, AZ 85346

SUBMITTED BY: NAME:_____ [ ] Corporation
[ ] Partnership
ADDRESS:_____ [ ] Partnership

_____
[ ] Joint Venture
PRINCIPAL OFFICE: _____ [ ] Other

(NOTE: Attach separate sheets as required)

1. How many years has your organization been in business as a Contractor? _____

2. How many years has your organization been in business under its present business name? _____

3. If a Corporation, answer the following:
Date of Incorporation: _____
State of Incorporation:_____
President: _____
Vice President(s): _____
_____
Secretary: _____
Treasurer: _____

4. If a Partnership, answer the following:
Date of organization: _____
Type of Partnership: _____
(General/Limited/Assoc.)
Name and Address of all partners.
_____
_____
_____
_____
_____

5. If other than a Corporation or Partnership, describe Organization and name Principals:

_____
_____
_____
_____
_____

6. What percent of the work do you normally perform with your own forces?_____

List trades:

_____ _____ _____
_____ _____ _____

7. Have you ever failed to complete any work awarded to you? If so, indicate when, where and why:

_____
_____
_____

8. Has any Officer or Partner of your Organization ever been an Officer or Partner of another Organization that failed to complete a construction contract? _____If so, state circumstances:

_____
_____

9. List major construction projects your Organization has under contract on this date:

Project Name	Name, Address & Telephone Number of Owner	Engineer	Contract Amount	Contract Date	Percent Complete	Scheduled Completion

10. List similar construction projects your Organization has completed in the past five years:

Project Name	Owner	Engineer	Contract Amount	Date Awarded	Date Completed	Percent with Own Forces

11. List the construction experience of the principal individuals in your Organization:

Individual's Name	Construction Experience - Years	Within Your Organization		
		Present Position & Years Experience	Dollar Volume Responsibility	Previous Position & Years Experience

12. List states and categories in which your Organization is legally qualified to do business:

_____

_____

_____

13. List all Arizona Contractor licenses currently held by your Organization; the status of each license; and provide a photocopy of each license with your bid proposal.

	License Class / #	Status
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

Please attach a list of additional Arizona Contractor licenses, if any.

14. Bank References:

_____

_____

_____

15. Trade References:

_____

_____

_____

16. Name of Bonding and Insurance Companies and Name and Address of Agents: Maximum Bonding Capacity_____

_____

_____

17. The Undersigned agrees to furnish, upon request by the Owner, within seven days after the Bid Opening, a current Statement of Financial Conditions, including Contractor's latest regular dated financial statement or balance sheet which must contain the following items:

    Current Assets: (Cash, joint venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits, and materials and prepaid expenses), net fixed assets and other assets.

    Current Liabilities: (Accounts payable, notes payable, accrued interest on notes, provision for income taxes, advances received from owners, accrued salaries, accrued payroll taxes), other liabilities, and capital (capital stock, authorized and outstanding shares par values, earned surplus).

    Date of statement or balance sheet:_____

    Name of firm preparing statement:_____

    By:_____
    (Agent and Capacity)

18. List of Subcontractors. In accordance with paragraph 1.0 of Instructions to Bidders, the following is a breakdown of all subcontractors anticipated to be used for completing this project and their approximate percentage of work to be performed.

    The Bidder certifies that all Subcontractors listed are eligible to perform Work on public works projects pursuant to ARS 34-241.

Subcontractor	Description of Work	% of Total Project

Total % of all Subcontractor's work on project _____

Total % for Prime Contractor _____

19. Dated at _____ this _____ day of _____ , _____.

Name of Organization: _____

By: _____

Title: _____

**** END OF SECTION 00420 ****

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SECTION 00430

AFFIDAVIT OF CONTRACTOR CERTIFYING THAT THERE WAS NO COLLUSION IN BIDDING FOR CONTRACT

STATE OF)
) ss
CITY OF)

(NAME OF INDIVIDUAL)

BEING DULY SWORN, DEPOSES AND SAYS:

THAT HE IS_____
(TITLE)

OF _____
(NAME OF BUSINESS)

THAT PURSUANT TO SECTION 34-253 OF THE ARIZONA REVISED STATUTES, HE CERTIFIES AS FOLLOWS:

THAT NEITHER HE NOR ANYONE ASSOCIATED WITH SAID

_____
(NAME OF BUSINESS)

HAS DIRECTLY, OR INDIRECTLY, ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS PROJECT.

_____
NAME

_____
TITLE

_____
NAME OF BUSINESS

SUBSCRIBED AND SWORN TO BEFORE ME THIS __ DAY OF _____,_____

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

**** END OF SECTION 00430 ****

This page is intentionally blank.

SECTION 00440

COMPLIANCE WITH FAIR SHARE POLICY

This project is funded in whole or in part with funds provided by Water Infrastructure Finance Authority of Arizona (WIFA). WIFA provides financial assistance from the state and federally funded Clean Water Revolving Fund (CWRF) and the Drinking Water Revolving Fund (DWRF). As a recipient of benefits from state or federal funds through WIFA, the TOWN must comply with the requirements of the Fair Share Policy.

The Fair Share Policy helps ensure that recipients of WIFA financial assistance award a fair share of contracting opportunities to minority business enterprises (MBEs), woman business enterprises (WBEs), and small businesses in rural areas (SBRAs). This Fair Share Policy is a requirement of the State of Arizona and the federal government. The Fair Share Policy applies to all prime contracts and sub-contracts for construction, equipment, supplies, and services.

The CONTRACTOR must document their meaningful actions to comply with the "Good Faith Effort" requirements. The CONTRACTOR will not be penalized if actual participation is below the set goals nor will they be relieved of continuing to make "Good Faith Efforts" if the goal is reached.

In order to comply with the Good Faith Effort, the CONTRACTOR must:

- Place qualified MBE/WBE/SBRA enterprises on solicitation lists.
- Assure that MBE/WBE/SBRA enterprises are solicited whenever they are potential sources.
- Divide project tasks, when economically feasible, into small tasks or quantities to permit maximum participation by MBE/WBE/SBRA enterprises.
- Establish delivery schedules when the requirements of the work permit, which will encourage participation by MBE/WBE/SBRA enterprises.
- Use the services and assistance of the Small Business Administration, the Minority Business Development Agency, and the Department of Commerce as resources to locate and contact MBE/WBE/SBRA enterprises.

A business qualifies as a MBE or WBE if it is:

- Certified as MBE or WBE by the Small Business Administration or other federal agency or certified by a State or State agency or

- An independent business concern that, although not certified, is at least 51 percent owned by one or more minority group members or women and whose daily business operations are managed and directed by one or more of the minority or women owners or

- In the case of a publicly owned business, at least 51 percent of the stock is owned by one or more minority group members or women and whose daily business operations are managed and directed by one or more of the minority or women owners.

A business qualifies as a SBRA if it is:

- A business concern that is physically located outside any standard metropolitan statistical area (SMSA) within Arizona.

Name of Prime Contractor:

_____

Project Title: S. Scott Lane Sewer Line Extension

_____ has made a Good Faith Effort to facilitate MBE/WBE/SBRA
(Contractor)

Participation in this construction contract by satisfactorily following the affirmative action steps:

- Place qualified MBE/WBE/SBRA enterprises on solicitation lists.

- Assure that MBE/WBE/SBRA enterprises are solicited whenever they are potential sources.

- Divide project tasks, when economically feasible, into small tasks or quantities to permit maximum participation by MBE/WBE/SBRA enterprises.

- Establish delivery schedules when the requirements of the work permit, which will encourage participation by MBE/WBE/SBRA enterprises.

- Use the services and assistance of the Small Business Administration, the Minority Business Development Agency, and the Department of Commerce as resources to locate and contact MBE/WBE/SBRA enterprises.

CONTRACTOR shall maintain documentation related to MBE/WBE/SBRA Good Faith Effort, sub-contractor selection, and MBE/WBE/SBRA participation, in the project files and make available upon request by the TOWN.

I, the undersigned representative of

_____ hereby
(Contractor)

certify that all of the information provided herein is correct to the best of my knowledge and belief.

_____ _____
(Signature of Authorized Representative) *(Date)*

_____
(Type or Print Name of Authorized Representative)

Please list any MBE/WBE/SBRA enterprises selected to provide services, equipment, or supplies for this project on the following sheet (if any).

The following MBE/WBE/SBRA enterprises have been selected to provide services, equipment, or supplies for the listed project:

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

_____

MBE WBE SBRA
(Name of Company) *(Circle if applicable)*

**** END OF SECTION 00440 ****

SECTION 00450

HAZARD COMMUNICATION PROGRAM

HAZARD COMMUNICATION PROGRAM FOR_____

(*Name of Company*)

The purpose of this program is to ensure that potential hazards and hazard control measures for chemicals used by this company are understood by company employees.

The written program is available for employee review at any time. It is located _____. A copy of the program will be provided to any employee or employee representative, upon request.

CONTAINER LABELING:

_____ will verify that all containers received for use by this company will:
(name/title of individual)

* be clearly labeled as to the contents, matching identification on MSDS;
* note the appropriate hazard warnings;
* List the name and address of the manufacturer.

No containers will be released for use until the above data is verified.

MATERIAL SAFETY DATA SHEETS:

Copies of MSDS's for all hazardous chemicals to which employees may be exposed will be kept

_____.

_____ will be responsible for ensuring that:
(name/title of individual)

* MSDS's for the new chemicals are available;
* MSDS's will be available for review to all employees during each work shift;
* Copies will be available on request.

EMPLOYEE TRAINING AND INFORMATION:

Each employee will be provided the following information and training before working in areas where hazardous chemicals exist. In addition, if a new hazardous material is introduced into the workplace, affected employees will be given new information and training concerning that material.

A. Minimum Information Provided:

(1) All operations and locations in the work area where hazardous chemicals are present.

GENERAL INDUSTRY

A. Minimum Information Provided:

(1) The location and availability of the written hazard communication program, including list(s) of hazardous chemicals used and related material safety data sheets;

(2) The method the company will use to inform employees of potential hazards of non-routine tasks (jobs that are not routine for an individual because of infrequency, location or type.)

B. Minimum Training Provided:

(1) Methods and observations used to detect the presence or release of a hazardous chemical in the work area (such as company monitoring programs, continuous monitoring device, visual appearance, odor or to other characteristics of hazardous chemicals;

(2) The physical and health hazards of chemicals in the assigned work area;

(3) The measures to take to protect against such hazards, including specific company procedures concerning work practices, emergencies and care and use of protective equipment.

(4) Details of the company hazard communication program, including explanation of the labeling system, the material safety data sheets, and how to obtain and use the appropriate hazard information.

(OPTIONAL) Upon completion of the training, each employee will sign a form acknowledging receipt of the written hazard communication program and related training.

HAZARDOUS NON-ROUTINE TASKS: (If applicable.)

If company employees are required to do hazardous non-routine tasks, such as welding in confined spaces, or cleaning of tanks, the employer must address how the employees doing the work will be informed about the specific hazards to which they will be exposed, what personal protective equipment will be provided and who will be responsible to oversee the operation or operations. If the company does not have any hazardous non-routine tasks, line through this section and state "NO HAZARDOUS NON-ROUTINE TASKS".

CHEMICALS IN UNLABELED PIPES: (If applicable.)
If the company has chemicals in unlabeled pipes, the company must inform the employees of the hazards associated with those chemicals. If the company does not have any chemicals in unlabeled pipes, line through this section and state "NO CHEMICALS IN UNLABELED PIPES".

INFORMING CONTRACTORS:
Providing contractors and their employees with the following information is the responsibility of _____.
(Name/title of individual)

(1) Hazardous chemicals to which they may be exposed while on the job site;
(2) Measures the employees may take to lessen the possibility of exposure;
(3) Steps the company has taken to lessen the risks;
(4) Where the MSDS's are for chemicals to which they may be exposed;
(5) Procedures to follow if they are exposed.

CONTRACTORS INFORMING EMPLOYERS:
Contractors entering this workplace with hazardous materials will supply this employer with MSDS's covering those particular products the contractor may expose this company's employees to while working at this site.

LIST OF HAZARDOUS CHEMICALS IN THIS WORKPLACE

_____ _____
_____ _____
_____ _____
_____ _____

Attach separate sheet if necessary.

CONTRACTOR:

By: _____

Name: _____

Title: _____

Address: _____

**** END OF SECTION 00450 ****

This page is intentionally blank.

EXHIBIT 1 - AFFIDAVIT OF LAWFUL PRESENCE IN THE UNITED STATES

ARS §§1-501 and 502 require individual person(s) or duly authorized company representative to complete this form to apply to Town of Quartzsite for a local public benefit (defined as a grant, contract or loan). Authorized party must demonstrate through the presentation of one of the following documents that you are lawfully present in the United States.

LAWFUL PRESENCE IN THE UNITED STATES CAN BE DEMONSTRATED BY PRESENTATION OF ONE (1) OF THE DOCUMENTS LISTED BELOW.

Please present the document indicated below to a Notary for review and signing of the affidavit. Attach a copy of the indicated and supporting documentation to this affidavit. Upon completion, submit copy to: Town of Quartzsite, Clerk's Office, 465 N. Plymouth Ave., P.O. Box 2812, AZ, 85346.

_____ 1. An Arizona driver license issued after 1996.
Print first 4 numbers/letters from license: ___ ___ ___ ___

_____ 2. An Arizona non-operating identification License.
Print first 4 numbers/letters: ___ ___ ___ ___

_____ 3. A birth certificate or delayed birth certificate issued in any state, territory or possession of the United States.
Year of birth: _____: Place of birth: _____

_____ 4. A United States Certificate of Birth abroad.
Year of birth: _____: Place of birth: _____

_____ 5. A United States passport.
Print first 4 numbers/letters on Passport: ___ ___ ___ ___

_____ 6. A foreign passport with a United States Visa.
Print first 4 numbers/letters on Passport ___ ___ ___ ___
Print first 4 numbers/letters on Visa ___ ___ ___ ___

_____ 7. An I-94 form with a photograph.
Print first 4 numbers on I-94: ___ ___ ___ ___

_____ 8. **A UNITED STATES CITIZENSHIP & IMMIGRATION SERVICES EMPLOYMENT AUTHORIZATION DOCUMENT (EAD).**
Print first 4 numbers/letters on EAD: ___ ___ ___ ___

_____ 9. **REFUGEE TRAVEL DOCUMENT.**
Date of Issuance: _____ Refugee Country: _____

_____ 10. **A UNITED STATES CERTIFICATE OF NATURALIZATION.**
Print first 4 digits of CIS Reg. No.: ___ ___ ___ ___

_____ 11. **A UNITED STATES CERTIFICATE OF CITIZENSHIP.**
Date of Issuance: _____ Place of Issuance: _____

_____ 12. **A TRIBAL CERTIFICATE OF INDIAN BLOOD.**
Date of Issuance: _____ Name of Tribe: _____

_____ 13. **A TRIBAL OR BUREAU OF INDIAN AFFAIRS AFFIDAVIT OF BIRTH.**
Year of Birth: _____ Place of Birth: _____

I DO SWEAR OR AFFIRM UNDER PENALTY OF LAW THAT I AM LAWFULLY PRESENT IN THE UNITED STATES AND THAT THE DOCUMENT I PRESENTED ABOVE AS VERIFICATION IS TRUE.

_____ _____
Signature Business/Company Address (if applicable)

_____ _____
Print Name Address

Date: _____ _____
City, State, Zip Code

Return completed form and supporting documentation to: Town of Quartzsite, Clerk's Office, 465 N. Plymouth Ave., P.O. Box 2812, Quartzsite, AZ, 85346.

OFFICE USE ONLY: NOTARY NAME: _____
(Print Name)

NOTARY SIGNATURE (Stamp) & DATE: _____

ALL VIOLATIONS OF FEDERAL IMMIGRATION LAW SHALL BE REPORTED TO 1-866-347-2423

SECTION 00500

CONTRACT

THIS CONTRACT is entered into by and between the TOWN OF QUARTZSITE, ARIZONA, a municipal corporation (hereinafter "OWNER"), and a(n) STATE corporation,
Federal I.D. # _____ , (hereinafter "CONTRACTOR").

WHEREAS, OWNER has developed plans for and desires to commence the **S SCOTT LANE SEWER LINE EXTENSION** (hereinafter "PROJECT"); and

WHEREAS, CONTRACTOR represents that it possesses the experience, competence, equipment and financing to properly complete the PROJECT, and has formally proposed to do so, and to furnish all necessary labor, materials, and equipment and services therefore in accordance with said plans, and subject to the terms and conditions hereof.

NOW, THEREFORE, in consideration of these promises and the mutual covenants herein, it is hereby agreed as follows:

1. CONTRACTOR shall commence and complete the construction of the Project Name, Project No. ;

2. CONTRACTOR shall furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT.

3. CONTRACTOR shall commence the PROJECT in accordance with the CONTRACT DOCUMENTS within TEN (10) calendar days after the date of the Notice to Proceed. Final completion of the PROJECT shall occur within **SIXTY (60) calendar days** of the date of the Notice to Proceed. The period for completion may be extended through the authorized and approved change order process.

4. Liquidated Damages: OWNER and CONTRACTOR recognize that time is of the essence of this CONTRACT and that OWNER will suffer financial loss if the PROJECT is not completed within the time specified in paragraph 3 above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual losses or damages (including special, indirect, consequential, incidental and any other losses or damages) suffered by OWNER if a complete acceptable PROJECT is not delivered on time.

Accordingly, and instead of requiring proof of such losses or damages, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay the OWNER **$** for each calendar day that expires after the time specified in paragraph 3 for delivery of acceptable Bid Items, plus any costs incurred by the Engineer as provided in Section 17 of the General Conditions.

5. CONTRACTOR agrees to complete the PROJECT in accordance with all of the

terms and conditions of the CONTRACT DOCUMENTS for the sum of **$** _____ as shown in the Bid Schedule.

6. CONTRACTOR shall submit a completed Section 00450 entitled Hazard Communication Program with the executed copy of this CONTRACT.

7. The term "CONTRACT DOCUMENTS" means and includes the following:

00020 Notice Inviting Bids
00100 Information for Bidders
00300 Bid Proposal
00310 Bid Price Schedule
00400 Bid Bond
00420 Bidder's Statement of Qualifications
00430 Bidder's Affidavit of No Collusion
00440 Compliance With Fair Share Policy Program
00450 Hazard Communication Program
00460 Employment Eligibility Verification
00470 Affidavit of Lawful Presence in the US
00500 CONTRACT
00500A Indemnification and Insurance Requirements
00500B Contractor Claim Handling Procedure
00510 Arizona Statutory Performance Bond
00520 Arizona Statutory Payment Bond
00670 Notice of Award
00680 Notice to Proceed
00690 Certificate of Final Completion
00700 General Conditions
00800 Special Provisions
Technical Specifications and Details
Construction Contract Drawings
Change Orders
Lien Releases (Conditional and Final)
Addenda

8. OWNER shall pay CONTRACTOR in the manner and at such times as set forth in the General Conditions and in such amounts as required by the CONTRACT DOCUMENTS.

9. CONTRACTOR shall pay its subcontractors and material suppliers within seven (7) calendar days of receipt of each progress payment in accordance with Arizona Revised Statutes (A.R.S.) § 34-221.

10. In the event CONTRACTOR fails to perform any portion of the PROJECT or satisfy any term or condition of the CONTRACT DOCUMENTS, OWNER may at its sole discretion file notice and/or claim of such failure with CONTRACTOR'S surety.

11. Conflict of Interest. The CONTRACT is subject to the provisions of A.R.S. § 38-511. The OWNER may cancel this CONTRACT without penalty or further obligations by the

OWNER or any of its departments or agencies if any person significantly involved in initiating, negotiating, securing, drafting, or creating this CONTRACT on behalf of the OWNER or any of its departments or agencies is, at any time while the CONTRACT of any extension of the CONTRACT is in effect, an employee of any other party to the CONTRACT in any capacity or a consultant to any other party of the CONTRACT with respect to the subject matter of the CONTRACT.

12. Scrutinized Business Operations. Pursuant to A.R.S. § § 35-391.06 and 35-393.06, the CONTRACTOR certifies that it does not have scrutinized business operations in Sudan or Iran. For the purpose of this Section the term "scrutinized business operations" shall have the meanings set forth in A.R.S. § 35-391 or 35-393, as applicable. If the OWNER determines that the CONTRACTOR submitted a false certification, the OWNER may impose remedies as provided by law including terminating this CONTRACT.

13. Export Administration Act. The CONTRACTOR warrants compliance with the Export Administration Act.

14. Recyclable Products. The CONTRACTOR shall use recyclable products and products which contain recycled content to the maximum extent economically feasible in the performance of the work set forth in the CONTRACT.

15. Asbestos License. The CONTRACTOR shall possess an asbestos abatement license if required under A.R.S. Title 32 or 49.

16. Assignment. No right or interest in this CONTRACT shall be assigned by CONTRACTOR without prior, written permission of the OWNER signed by the Town Manager; and no delegation of any duty of CONTRACTOR shall be made without prior written permission of the OWNER signed by the Town Manager. Any attempted assignment or delegation by CONTRACTOR in violation of this provision shall be a breach of this CONTRACT by CONTRACTOR.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this CONTRACT in two (2) copies, each of which shall be deemed an original. The last date of signature shall be the effective date of this CONTRACT.

OWNER:
Town of Quartzsite, Arizona

By: _____ Date: _____

Name: _____
Title: _____

APPROVED AS TO FORM:
Town of Quartzsite Attorney's Office

By: _____ Date: _____

ADMINISTRATIVE SERVICES:

By: _____ Date: _____

CONTRACTOR:

By: _____ Date: _____

Name/Title: _____

Address: _____

ATTEST:

BY: _____

Name/Title: _____

** END OF SECTION **

SECTION 00500A

TOWN OF QUARTZSITE CONSTRUCTION CONTRACT
INDEMNIFICATION AND INSURANCE REQUIREMENTS
(long form)

I. INDEMNIFICATION

CONTRACTOR shall indemnify, defend, save and hold harmless the Town of Quartzsite, its departments, agencies, boards, commissions and its officers, officials, agents, and employees (hereinafter referred to as "Indemnitee") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of CONTRACTOR or any of its owners, officers, directors, agents, employees or subcontractors. This indemnity includes any claim or amount arising out of or recovered under the Workers' Compensation Law or arising out of the failure of such consultant to conform to any federal, state or local law, statute, ordinance, rule, regulation or court decree. It is the specific intention of the parties that the Indemnitee shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the Indemnitee, be indemnified by CONTRACTOR from and against any and all claims. It is agreed that CONTRACTOR will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration of the award of this CONTRACT, the CONTRACTOR agrees to waive all rights of subrogation against the Town of Quartzsite, its officers, officials, agents and employees for losses arising from the work performed by the CONTRACTOR for the Town of Quartzsite.

II. INSURANCE REQUIREMENTS

A. CONTRACTOR and its subcontractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this CONTRACT, are satisfied, insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the CONTRACTOR, its agents, representatives, employees or subcontractors.

B. The insurance requirements herein are minimum requirements for this CONTRACT and in no way limit the indemnity covenants contained in this CONTRACT. Town in no way warrants that the minimum limits contained herein

are sufficient to protect the CONTRACTOR from liabilities that might arise out of the performance of the work under this CONTRACT by the CONTRACTOR, its agents, representatives, employees or subcontractors, and CONTRACTOR is free to purchase additional insurance.

C. MINIMUM SCOPE AND LIMITS OF INSURANCE: CONTRACTOR shall provide coverage with limits of liability not less than those stated below.

1. **Commercial General Liability – Occurrence Form**
   Policy shall include bodily injury, property damage, personal injury and broad form contractual liability coverage.

a.	General Aggregate	$2,000,000
b.	Products – Completed Operations Aggregate	$1,000,000
c.	Personal and Advertising Injury	$1,000,000
d.	Blanket Contractual Liability – Written and Oral	$1,000,000
e.	Fire Legal Liability	$ 50,000
f.	Each Occurrence	$1,000,000

   i. The policy shall be endorsed to include the following additional insured language: ***"The Town of Quartzsite, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees shall be named as additional insureds with respect to liability arising out of the activities performed by or on behalf of the CONTRACTOR".***

   ii. Policy shall contain a waiver of subrogation against the Town of Quartzsite, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees for losses arising from work performed by or on behalf of the CONTRACTOR.

   iii. Completed operations coverage shall remain effective for at least two years following expiration of CONTRACT.

2. **Business Automobile Liability**
   a. Bodily Injury and Property Damage for any owned, hired, and/or non-owned vehicles used in the performance of this CONTRACT.

   Combined Single Limit (CSL) $1,000,000

   i. The policy shall be endorsed to include the following additional insured language: "the Town of Quartzsite, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees shall be named as additional insureds with respect to liability

arising out of the activities performed by or on behalf of the CONTRACTOR, involving automobiles owned, leased, hired or borrowed by the CONTRACTOR."

ii. Policy shall contain a waiver of subrogation against the Town of Quartzsite, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees for losses arising from work performed by or on behalf of the CONTRACTOR.

3. **Worker's Compensation and Employers' Liability**

a. Workers' Compensation	Statutory
b. Employers' Liability Each Accident	$ 500,000
Disease – Each Employee	$ 500,000
Disease – Policy Limit	$1,000,000

i. Policy shall contain a waiver of subrogation against the Town of Quartzsite its departments, agencies, boards, commissions, and its officers, officials, agents, and employees for losses arising from work performed by or on behalf of the CONTRACTOR.

ii. This requirement shall not apply if exempt under A.R.S. Section 23-901.

4. **Professional Liability (Errors and Omissions Liability)***
***If Applicable**

a. Each Claim	$1,000,000
b. Annual Aggregate	$2,000,000

i. In the event that the professional liability insurance required by this CONTRACT is written on a claims-made basis, CONTRACTOR warrants that any retroactive date under the policy shall precede the effective date of this CONTRACT; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years beginning at the time work under this CONTRACT is completed.

ii. The policy shall cover professional misconduct or lack of ordinary skill for those positions defined in the Scope of Work of this CONTRACT.

5. **Builders' Risk (Property) Insurance (Vertical Construction Only)**

a. CONTRACTOR shall purchase and maintain, on a replacement cost basis Builders' Risk insurance in the amount of the initial CONTRACT amount as well as subsequent modifications thereto, including

modifications through Change Order, for the entire work at the site. Such Builders' Risk insurance shall be maintained until final payment has been made or until no person or entity other than TOWN has an insurable interest in the property required to be covered, whichever is earlier. This insurance shall include interests of TOWN, CONTRACTOR and any tier of CONTRACTOR's subcontractors in the work during the life of the CONTRACT and course of construction, and shall continue until the work is completed and accepted by TOWN. For new construction projects, CONTRACTOR agrees to assume full responsibility for loss or damage to the work being performed and to the buildings or structures under construction. For renovation construction projects, CONTRACTOR agrees to assume responsibility for loss or damage to the work being performed at least up to the full CONTRACT amount, unless otherwise required by the Contract documents or amendments thereto.

b. Builders' Risk insurance shall be on an all-risk policy form and shall also cover false work and temporary buildings or structures and shall insure against risk of direct physical loss or damage from external causes including debris removal, demolition occasioned by enforcement of any applicable legal requirements and shall cover reasonable compensation for architects' and engineers' services and expenses, and other "soft costs," required as a result of such insured loss.

c. Builders' Risk insurance must provide coverage from the time any covered property falls within CONTRACTOR's control and/or responsibility and continue without interruption during construction or renovation or installation, including any time during which covered property is being transported to the construction or installation site, and while on the construction or installation site awaiting installation. The policy will provide coverage while the covered premises or any part thereof is occupied. Builders' Risk insurance shall be primary and not contributory.

d. If the CONTRACT requires testing of equipment or materials or other similar operations, at the option of TOWN, CONTRACTOR will be responsible for providing property insurance for these exposures under a Boiler Machinery insurance policy.

6. **Contractor's Personal Property**

CONTRACTOR and each of its subcontractors and suppliers shall be solely responsible for any loss or damage to its or their personal property and that of their employees and workers, including, without limitation, property or materials created or provided pursuant to this CONTRACT, any subcontract or otherwise, its or their tools, equipment, clothing,

fencing, forms, mobile construction equipment, scaffolding, automobiles, trucks, trailers or semi-trailers including any machinery or apparatus attached thereto, temporary structures and uninstalled materials, whether owned, used, leased, hired or rented by CONTRACTOR or any subcontractor, consultant or supplier or employee or worker (collectively, "Personal Property"). CONTRACTOR and its subcontractors, consultants and suppliers, at its or their option and own expense, may purchase and maintain insurance for such Personal Property and any deductible or self-insured retention in relation thereto shall be its or their sole responsibility. Any such insurance shall be CONTRACTOR's and the subcontractors', suppliers' and employees' and workers' sole source of recovery in the event of loss or damage to its or their Personal Property. Any such insurance purchased and maintained by CONTRACTOR and any subcontractor, consultant or supplier shall include a waiver of subrogation as to Owner. CONTRACTOR waives all rights of recovery, whether under subrogation or otherwise, against all such parties for loss or damage covered by CONTRACTOR's property insurance. CONTRACTOR shall require the same waivers from all subcontractors and suppliers and from the insurers issuing property insurance policies relating to the Work or the Project purchased and maintained by all subcontractors and suppliers. The waivers of subrogation referred to in this subparagraph shall be effective as to any individual or entity even if such individual or entity (a) would otherwise have a duty of indemnification, contractual or otherwise, (b) did not pay the insurance premium, directly or indirectly, and (c) whether or not such individual or entity has an insurable interest in the property which is the subject of the loss or damage.

7. **Theft, Damage, or Destruction of Work**

In the event of theft, damage or destruction of the Work, CONTRACTOR will re-supply or rebuild its Work without additional compensation and will look to its own resources or insurance coverages to pay for such re-supply or rebuilding. CONTRACTOR will promptly perform, re-supply or rebuild, regardless of the pendency of any claim by CONTRACTOR against any other party, including Owner, that such party is liable for damages, theft or destruction of CONTRACTOR's Work. This subparagraph shall apply except to the extent that the cost of re-supply or rebuilding is paid by Owner's builder's risk insurance; in such event, Owner waives (to the fullest extent permitted by the builder's risk policy) all rights of subrogation against CONTRACTOR and each of its subcontractors to the extent of such payment by Owner's builder's risk insurer.

D. ADDITIONAL INSURANCE REQUIREMENTS: The policies shall include, or be endorsed to include, the following provisions:

1. The Town of Quartzsite, its departments, agencies, boards, commissions and its officers, officials, agents, and employees wherever additional insured status is required. Such additional insured shall be covered to the full limits of liability purchased by the CONTRACTOR, even if those limits of liability are in excess of those required by this CONTRACT.
2. The Contractor's insurance coverage shall be primary insurance with respect to all other available sources.
3. Coverage provided by the Contractor shall not be limited to the liability assumed under the indemnification provisions of this CONTRACT.

E. NOTICE OF CANCELLATION: Each insurance policy required by the insurance provisions of this CONTRACT shall not be suspended, voided, cancelled, reduced in coverage or in limits without ten (10) business days written notice to the town. Such notice shall be mailed directly to Town of Quartzsite, Attention Town Clerk, 465 N. Plymouth Avenue, Quartzsite, AZ, 85346 and shall be sent by certified mail, return receipt requested.

F. ACCEPTABILITY OF INSURERS**:** Insurance is to be placed with duly licensed or approved non-admitted insurers in the state of Arizona with an "A.M. Best" rating of not less than A- VII. TOWN in no way warrants that the above-required minimum insurer rating is sufficient to protect the CONTRACTOR from potential insurer insolvency.

G. VERIFICATION OF COVERAGE**:**

1. CONTRACTOR shall furnish TOWN with certificates of insurance as required by this CONTRACT. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf and the Project/contract number and project description shall be noted on the certificate of insurance.
2. All certificates and endorsements are to be received and approved by TOWN at least ten (10) days before work commences. Each insurance policy required by this CONTRACT must be in effect at or prior to commencement of work under this CONTRACT and remain in effect for the duration of the Project. Failure to maintain the insurance policies as required by this CONTRACT, or to provide evidence of renewal, is a material breach of contract.
3. All renewal certificates required by this CONTRACT shall be sent directly to the Town of Quartzsite, Attention Town Clerk, 465 N. Plymouth Avenue, Quartzsite, AZ, 85346. The Project/contract number and project description shall be noted on the certificate of insurance. TOWN

reserves the right to require complete, certified copies of all insurance policies required by this CONTRACT at any time**.**

H. SUBCONTRACTORS**:** CONTRACTOR's certificate(s) shall include all subcontractors as insureds under its policies **or** CONTRACTOR shall furnish to TOWN separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to the minimum requirements identified above.

G. APPROVAL**:** Any modification or variation from the insurance requirements in this CONTRACT must have prior approval from the TOWN's Risk Management Division, whose decision shall be final. Such action will not require a formal CONTRACT amendment, but may be made by administrative action.

H. EXCEPTIONS**:** In the event the CONTRACTOR or sub-contractor(s) is/are a public entity, then the Insurance Requirements shall not apply. Such public entity shall provide a Certificate of Self-Insurance.

III. NOTICE

We, the undersigned insurance providers, understand that the insurance companies issuing the policy or policies shall have no recourse against the Town of Quartzsite (including its agents and agencies as aforesaid) for payment of any premiums or for assessments under any form of policy.

We, the undersigned insurance providers, understand that any and all deductibles in the above described insurance policies shall be assumed by and be for the account of, and at the sole risk of CONTRACTOR.

Nothing included in this Section is intended, nor shall be construed, to extend any coverage, provided by the insurance policies listed hereon, beyond the terms listed therein.

This NOTICE must be signed by a duly authorized representative of the insurance company and the original returned to CONTRACTOR to deliver to TOWN, along with the appropriate insurance certificate(s).

The duly authorized insurance representatives whose signatures appear below have read, understood and kept a copy of this Section to the Town of Quartzsite Project S. Scott Lane Sewer Line Extension.

Date_____
Applied to Project S. Scott Lane Sewer Line Extension

Applicable Insurance Policy Number and
Signature of Insurance Company Representative

General Liability Policy #_____

Insurance Company _____
(print name)

Auto Liability Policy #_____

Insurance Company _____
(print name)

Professional Liability Policy #_____

Insurance Company _____
(print name)

SECTION 00500B

CONTRACTOR Claim Handling Procedure

1. Claimant is to submit in writing to the OWNER or their REPRESENTATIVE the details of the claim to include the where, when, and how of the claim, and an estimate of damage, if applicable.

2. OWNER or their REPRESENTATIVE will forward the claim directly to the CONTRACTOR for handling. The CONTRACTOR is to respond to the claimant, in writing, within 30 calendar days of receipt with copies to:

   Town of Quartzsite Risk Management
   Town of Quartzsite Public Works Department
   OWNER'S REPRESENTATIVE, if applicable

   If the CONTRACTOR denies the claim, the reasons for such denial must be included in the response to the claimant.

**** END OF SECTION 00500B ****

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SECTION 00510

ARIZONA STATUTORY PERFORMANCE BOND

PURSUANT TO TITLES 28, 34, AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS THAT: _____ (hereinafter "Principal"), as Principal, and _____ (hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____ with its principal office in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto Town of Quartzsite, Arizona (hereinafter "Obligee") in the amount of _____ (Dollars) ($_____), for the payment whereof, Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the ___ day of _____, _____, to furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of

S SCOTT LANE SEWER LINE EXTENSION

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the contract during the original term of the contract and any extension of the contract, with or without notice of the Surety, and during the life of any guarantee required under the contract, and also performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this ___ day of _____ , _____.

_____ _____

PRINCIPAL SEAL

_____ BY:_____ _____

AGENCY OF RECORD

_____ _____ _____

AGENCY ADDRESS SURETY SEAL

BY:_____ _____

**** END OF SECTION 00510 ****

SECTION 00520

ARIZONA STATUTORY PAYMENT BOND
PURSUANT TO TITLES 28, 34, AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS THAT: _____

(hereinafter "Principal"), as Principal, and _____ (hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____ with its principal office in the City of _____ , holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto Town of Quartzsite, Arizona (hereinafter "Obligee") in the amount of _____ _____(Dollars) ($) _____, for the payment whereof, Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ of _____, _____, to furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of

S SCOTT LANE SEWER LINE EXTENSION

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFOR, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal promptly pays all monies due to all persons supplying labor or materials to the Principal or the Principal's subcontractors in the prosecution of the work provided for in the contract, this obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statues, and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____, _____.

_____

PRINCIPAL SEAL

_____ BY:_____

AGENCY OF RECORD

_____ _____

AGENCY ADDRESS SURETY SEAL

BY:_____

**** END OF SECTION 00520 ****

SECTION 00670

NOTICE OF AWARD

TO: _____ **DATE:** _____

_____

_____

PROJECT DESCRIPTION:

S SCOTT LANE SEWER LINE EXTENSION

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for BIDS dated _____ , _____ and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of

$_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance Bond, Payment Bond, and Certificates of Liability, Vehicular, and Workmen's Compensation Insurance by _____.

If you fail to execute said Agreement and to furnish said BONDS by _____, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 2014.

Town of Quartzsite, Arizona

BY: _____

TITLE: _____

Acceptance of Notice
(NOTE: The contractor shall return a signed copy of this notice to the owner.)

Receipt of this NOTICE OF AWARD is hereby acknowledged by:

Contractor

this _____ day of _____ ,_____.

BY: _____ TITLE: _____

**** END OF SECTION 00670 ****

SECTION 00680

NOTICE TO PROCEED

TO: _____ Date: _____

_____

_____

RE: **TOWN OF QUARTZSITE**
S SCOTT LANE SEWER LINE EXTENSION

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 2014, **NO LATER THAN _____, 2014**, and you are to complete the **WORK** for the **S SCOTT LANE SEWER LINE EXTENSION** within the allotted timeframe. The date for completion of the WORK is therefore _____, ____.

OWNER: Town of Quartzsite, Arizona

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

(NOTE: The Contractor shall return a signed copy of this Notice to the Owner)

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

this the ____ day of_____, _____.

By: _____

Name: _____

Title: _____

**** END OF SECTION 00680 ****

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SECTION 00690

CERTIFICATE OF COMPLETION

I hereby state that all goods and/or services required by:

S SCOTT LANE SEWER LINE EXTENSION

have been delivered in substantial conformance with the contract, and all activities required by the Contractor under the contract have been completed as of _____ , _____.
Date

Town of Quartzsite, Arizona

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

(NOTE: The Contractor shall return a signed copy of this Notice to the Owner)

Receipt of the above **CERTIFICATE OF COMPLETION** is hereby acknowledged this the _____ day of _____, _____.

By: _____

Name: _____

Title: _____

**** END OF SECTION 00690 ****

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SECTION 00700

GENERAL CONDITIONS

This section of the CONTRACT DOCUMENTS is pre-printed. Any modifications to the following Articles, as may be required for this Project, are made in the SPECIAL PROVISIONS.

1.0 DEFINITIONS

Wherever in the CONTRACT DOCUMENTS the following terms are used, the intent and meaning shall be interpreted as follows:

1.1 Addenda

Written or graphic instruments issued prior to the opening of Bids which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.2 As Approved

The words "as approved", unless otherwise qualified, shall be understood to be followed by the words "by the OWNER".

1.3 As Shown, and as Indicated

The words "as shown" and "as indicated" shall be understood to be followed by the words "on the Drawings" or "in the Specifications".

1.4 Award

The acceptance, by the OWNER, of the successful BIDDER'S proposal.

1.5 Bid

The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.6 Bidder

Any individual, firm partnership or corporation, or combination thereof submitting a proposal for the WORK contemplated, acting directly or through a duly authorized representative.

1.7 Bonds

Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.

1.8 Calendar Day

Every day shown on the calendar, measured from midnight to the next midnight.

1.9 Change Order

A written order to the CONTRACTOR, signed by the OWNER, covering changes in the Plans, SPECIFICATIONS, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the WORK affected by such changes.

If the Change Order increases the existing Contract Amount, the Builder's Risk Insurance limit must be increased to the adjusted Contract Amount.

1.10 Contract

The "CONTRACT" is the written Contract covering the performance of the WORK and the furnishing of labor, materials, incidental services, tools, and equipment in the construction of the WORK. It includes SUPPLEMENTAL CONTRACTS amending or extending the WORK contemplated in the manner hereinafter described and which may be required to complete the WORK in a substantial and acceptable manner to the Owner. The CONTRACT may include Contract Change Orders.

1.11 Contract Documents

The "CONTRACT DOCUMENTS" consist of the BIDDING REQUIREMENTS, CONTRACT FORMS, CONDITIONS of the CONTRACT including General and/or Supplemental General Conditions, Special Provisions, the TECHNICAL SPECIFICATIONS, and the DRAWINGS, including all Addenda and modifications thereafter incorporated into the Documents before their execution and including all other requirements incorporated by specific reference thereto.

1.12 Contract Price

The total monies payable by OWNER to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.13 Contract Time

The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.14 Contractor

The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the WORK contracted for and the payment of all legal debts pertaining to the WORK who acts directly or through lawful agents or employees to complete the CONTRACT WORK.

1.15 Days

Unless otherwise specifically stated, the term "days" will be understood to mean calendar days.

1.16 Drawings

The term "DRAWINGS", also described as "PLANS", refers to the official DRAWINGS, profiles, cross sections, elevations, details, and other working drawings, and supplementary drawings, or reproductions thereof, which show the locations, character, dimensions, and details of the WORK to be performed. Drawings may either be bound in the same book as the balance of the CONTRACT DOCUMENTS or bound in separate sets, and are a part of the CONTRACT DOCUMENTS, regardless of the method of binding.

1.17 Engineer

The individual partnership, firm, or corporation duly authorized by the OWNER (sponsor) to be responsible for the ENGINEERING of the contract WORK and acting directly or through an authorized representative.

1.18 Field Order

A written order effecting a change in the WORK not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the ENGINEER to the CONTRACTOR during construction.

1.19 Final Acceptance

Upon due notice from the Contractor of presumptive completion of the entire project, the Owner will make an inspection. If all construction provided for and contemplated by the contract is found completed to his satisfaction, that inspection shall constitute the final inspection and the Owner will make the final acceptance. The Contractor will be notified in writing of this acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Owner will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the Owner will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of the final inspection.

1.20 Inspector

An authorized representative of the OWNER or Engineer assigned to make all necessary inspections and/or tests of the WORK performed or being performed, or of the materials furnished or being furnished by the CONTRACTOR.

1.21 Methodology and Quality of Workmanship

The manner and sequence of construction which considered to be the acceptable standard in which

to perform the WORK.

1.22 Notice

The term "notice" or the requirement to notify, as used in the CONTRACT DOCUMENTS or applicable State or Federal statutes, shall signify a written communication delivered in person or by certified or registered mail to the individual, or to a member of the firm, or to an officer of the corporation for whom it is intended. Certified or registered mail shall be addressed to the last business address known to him who gives the notice.

1.23 Notice of Award

The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.24 Notice to Proceed

Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

1.25 Or Equal

The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product names in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the OWNER.

1.26 Owner

The public or quasi-public body or authority, corporation, association, partnership, or individual for whom the WORK is to be performed.

1.27 Payment Bond

The approved form of security furnished by the CONTRACTOR and his surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of WORK.

1.28 Performance Bond

The approved form of security furnished by the CONTRACTOR and his surety as a guarantee that the CONTRACTOR will complete the WORK in accordance with the terms of the CONTRACT and guarantee the WORK for a period of one (1) year after acceptance of the WORK by OWNER.

1.29 Plans

Plans shall have the same meaning as "DRAWINGS", see Section 1.16.

1.30 Project

The undertaking to be performed as provided in the CONTRACT DOCUMENTS, see Section 1.11.

1.31 Proposal

The offer of the BIDDER for the WORK when made out and submitted on the prescribed proposal form, properly signed and guaranteed.

1.32 Proposal Guarantee

The cash, or cashier's check or certified 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 or doing of the WORK, if it is awarded to him, and will provide the contract bonds and insurance required of him.

1.33 Shop Drawings

All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.34 Specifications

The directions, provisions and requirements herein contained pertaining to the method and manner of performing the WORK or to the quantities and qualities of the materials to be furnished under the CONTRACT, together with all other directions, provisions and requirements herein contained, plus such amendments, deletions from or additions thereto which may be provided for by SUPPLEMENTAL CONTRACT or CHANGE ORDERS.

1.35 Subcontractor

A SUBCONTRACTOR is a person or entity who has a direct or indirect contract with a CONTRACTOR to perform any of the WORK at the site. For convenience, the term SUBCONTRACTOR is referred to throughout the CONTRACT DOCUMENTS as if singular in number and masculine in gender but includes the plural and feminine gender and includes a SUB-SUBCONTRACTOR or an authorized representative thereof.
The term SUBCONTRACTOR does not include any separate CONTRACTOR or his SUBCONTRACTORS.

1.36 Substantial Completion

"Substantial Completion" shall be that degree of completion of the project or a defined portion of the project, sufficient to provide the OWNER, at his discretion, the full-time use of the project or defined portion of the project for the purposes for which it was intended. "Substantial Completion" shall not be considered as final acceptance.

1.37 Supplemental General Conditions

Modifications to General Conditions required by a Federal Agency for participation in the PROJECT and approved by the agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS and such requirements that may be imposed by applicable state laws. The term also includes modifications or additions to the General Conditions required by the OWNER or ENGINEER.

1.38 Supplier

Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.39 Surety

The corporation, partnership, or individual, other than the CONTRACTOR, executing PAYMENT, or PERFORMANCE BONDS which are furnished to the OWNER by the CONTRACTOR.

1.40 Work

The word "WORK" within these CONTRACT DOCUMENTS shall include all material, labor, tools, utilities, and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the CONTRACT, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described or indicated and as required by good practice to provide a complete and satisfactory system or structure. As used herein, "provide" shall be understood to mean "provide complete in-place", that is, "furnish and install".

1.41 Working Day

A working day shall be any day, other than a legal holiday, Saturday or Sunday, on which the normal working forces of the CONTRACTOR may proceed with regular work is suspended for causes beyond the CONTRACTOR'S control.

1.42 Written Notice

Any notice to any party to the CONTRACT relative to any part of this CONTRACT in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his given address, or delivered in person to said party or his authorized representative for the WORK.

2.0 NOTICE TO PROCEED

2.1 After the OWNER has issued the NOTICE OF AWARD, the CONTRACTOR shall provide the PERFORMANCE BOND, the PAYMENT BOND, the CERTIFICATE OF INSURANCE, the WORK SCHEDULE, the monthly cash flow, and a signed Contract within ten (10) calendar days. The OWNER's attorney will review each document and, if they are found to be acceptable, the OWNER will sign and execute the CONTRACT. Within a period of sixty (60) calendar days after executing

the CONTRACT, the OWNER will issue the NOTICE TO PROCEED. Within ten (10) calendar days of the postmark date of the NOTICE TO PROCEED, the WORK shall commence. The CONTRACTOR shall not commence any WORK until such time that the NOTICE TO PROCEED has been issued.

3.0 ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

3.1 The ENGINEER may furnish additional instructions to the CONTRACTOR by means of DRAWINGS or otherwise, during the progress of the WORK as necessary to make clear or to define in greater detail the intent of the SPECIFICATIONS and CONTRACT DRAWINGS.

The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

4.0 SCHEDULES, REPORTS AND RECORDS

4.1 The CONTRACTOR shall submit to the OWNER payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

4.2 The CONTRACTOR, after the CONTRACT award and prior to the Pre-Construction Conference, shall prepare for submittal to the ENGINEER for review, a detailed progress schedule. The progress schedule shall be brought up to date and submitted to the ENGINEER prior to each progress payment request, and at such other time intervals as the ENGINEER may request.

A. Progress Schedule

The schedule shall be a time-scaled critical path progress schedule showing in detail the proposed sequence of activity. The critical path analysis shall consist of a graphic network diagram and shall clearly show start and completion dates and percentage of work completed.

4.3 The CONTRACTOR shall also forward to the ENGINEER, prior to each progress payment request, an itemized report of the delivery status of major and critical items of purchased equipment and material, including SHOP DRAWINGS and the status of shop and field fabricated work. These progress reports shall indicate the date of the purchase order, the current percentage of completion, estimated delivery, and cause of delay, if any.

4.4 If the completion of any part of the WORK or the delivery of materials is behind the approved schedule, the CONTRACTOR shall submit in writing a plan acceptable to the ENGINEER for bringing the WORK up to schedule.

4.5 The OWNER shall have the right to withhold progress payments for the WORK if the CONTRACTOR fails to update and submit the progress schedule and reports as specified, and such withholding shall not constitute grounds for additional claims by the CONTRACTOR against the OWNER.

4.6 The CONTRACTOR shall submit an estimated monthly cash flow, based upon the progress

schedule with the bonds, schedules, and CERTIFICATE OF INSURANCE.

5.0 DRAWINGS AND SPECIFICATIONS

5.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, utilities, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable quality and manner, ready for use, occupancy or operation by the OWNER.

5.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

5.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported verbally and within 24 hours of such a discovery, in writing to the ENGINEER, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR's risk, and the CONTRACTOR shall assume full responsibility therefore and shall bear all costs attributable thereto, if not acceptable to the OWNER.

6.0 SHOP DRAWINGS

6.1 The CONTRACTOR shall provide seven (7) copies of the SHOP DRAWINGS as specified or as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. All drawings and schedules shall be submitted sufficiently in advance to allow the ENGINEER not less than 20 regular working days for checking the submittal. The ENGINEER'S approval of any SHOP DRAWINGS shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS.

6.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification by means of a signed STAMP, that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS. SHOP DRAWINGS which, in the opinion of the ENGINEER, are incomplete or unchecked by the CONTRACTOR, will be returned to the CONTRACTOR for resubmission in the proper form.

If SHOP DRAWINGS or submittals are rejected by the ENGINEER, all costs incurred by the ENGINEER and/or the OWNER for reviewing the resubmittals shall be charged to the CONTRACTOR, and the OWNER has the right to deduct such costs from any monies owed the CONTRACTOR by the OWNER.

6.3 When SHOP DRAWINGS have been reviewed by the ENGINEER, two sets of submittals will be returned to the CONTRACTOR appropriately stamped. If major changes or corrections are necessary, the SHOP DRAWING may be rejected and one set will be returned to the CONTRACTOR with such changes or corrections indicated, and the CONTRACTOR shall correct and resubmit the

SHOP DRAWINGS. No changes shall be made by the CONTRACTOR to resubmitted SHOP DRAWINGS other than those changes indicated by the ENGINEER, unless such changes are clearly described in a letter accompanying the resubmitted SHOP DRAWINGS.

6.4 The review of such SHOP DRAWINGS and catalog cuts by the ENGINEER shall not relieve the CONTRACTOR from responsibility for corrections of dimensions, fabrication details, and space requirements, or for deviations from the CONTRACT DRAWINGS or SPECIFICATIONS, unless the CONTRACTOR has called attention to such deviations in writing by a letter accompanying the SHOP DRAWINGS and the ENGINEER approves the change or deviation in writing at the time of submission; nor shall review by the ENGINEER relieve the CONTRACTOR from the responsibility for errors in the SHOP DRAWINGS. When the CONTRACTOR does call such deviations to the attention of the ENGINEER, the CONTRACTOR shall state in his letter whether or not such deviations involve any deduction or extra cost adjustment.

6.5 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

7.0 RECORD DRAWINGS

7.1 During construction, the CONTRACTOR shall keep an accurate record of the following:

A. Deviations between the WORK as shown on the PLANS and the WORK as actually installed.

B. The specific locations of piping, valves, electric conduits, duct work, equipment, and other such work which was not located on the PLANS. The RECORD DRAWINGS shall show distances to these locations from known points on the PLANS.

C. Equipment schedules indicating manufacturer's names and model numbers. When all revisions showing work as installed are made, the corrected set of plans shall be delivered to the ENGINEER before the final pay request is processed. These plans shall be clearly marked "Record Drawings."

7.2 Nothing contained in this section shall be construed as authorizing any deviation in the WORK as shown on the CONTRACT DRAWINGS without a written Change Order or written authority to the CONTRACTOR from the ENGINEER.

8.0 MATERIALS, SERVICES, AND FACILITIES

8.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

8.2 The CONTRACTOR shall furnish the OWNER a list of materials and the source of supply of

each of the materials on the list. The source of supply of each of the materials shall be approved by the OWNER before the delivery of said materials is started. Only materials conforming to these SPECIFICATIONS and approved by the OWNER shall be used in the WORK. All materials proposed for use may be inspected or tested at any time during their preparation and use. After trial, if it is found that sources of supply which have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the CONTRACTOR shall furnish approved material from other approved sources. No material which, after approval, has in any way become unfit for use shall be used in the WORK.

8.3 The CONTRACTOR warrants to the OWNER and ENGINEER that the materials and equipment furnished under the CONTRACT will be new and of a quality equal to that specified or approved and, that all WORK will be of good quality, free from faults and defects and in conformance with the CONTRACT DOCUMENTS. Mechanical and electrical equipment shall be the products of manufacturers of established good reputations and regularly engaged in the fabrication of such equipment. Unless otherwise noted, any equipment offered shall be current models which have been in successful regular operation under comparable conditions for a period of at least two years. This time requirement, however, does not apply to minor details nor to thoroughly demonstrated improvements in design or in material of construction. WORK shall be done and completed in a thorough and workmanlike manner and if required by ENGINEER, the CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and equipment used.

8.4 All materials which the ENGINEER or his authorized INSPECTOR has determined do not conform to the requirements of the PLANS and SPECIFICATIONS will be rejected. They shall be removed immediately from the vicinity of the WORK by the CONTRACTOR at his own expense, unless otherwise permitted by the ENGINEER. No rejected material, the defects of which have been subsequently corrected, shall be used in the WORK, unless approval in writing has been given by the ENGINEER. Upon failure of the CONTRACTOR to comply promptly with any order of the ENGINEER made under the provisions in this section, the ENGINEER shall have authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any monies due or to become due the CONTRACTOR.

8.5 If any part or portions of the WORK done or material furnished under this CONTRACT shall prove defective or non conforming with the DRAWINGS and SPECIFICATIONS, and if the imperfection in the same shall not be of sufficient magnitude or importance as to make the WORK dangerous or unsuitable, or if the removal of such WORK will create conditions which are dangerous or undesirable, the ENGINEER shall have the right and authority to retain such WORK but shall make such deductions in the final payment therefor as may be just and reasonable. Such adjustment shall be effected whether or not final payment has been made.

8.6 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

8.7 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

8.8 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased

by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other Contract by which an interest is retained by the seller.

9.0 INSPECTION AND TESTING

9.1 All material and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

9.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

9.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

9.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness, the minimum of which shall be forty-eight (48) hours. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

9.5 Inspections, tests or approvals by the ENGINEER or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

9.6 The ENGINEER and his representative will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all WORK, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

9.7 If any WORK is covered contrary to the written instructions of the ENGINEER or prior to inspection, if must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

9.8 If the ENGINEER considers it necessary or advisable that WORK that has already been approved be inspected or tested by the ENGINEER or others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

10.0 SUBSTITUTIONS

10.1 Whenever a material, article or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME. Any substitutions not properly approved and authorized by the ENGINEER may be considered defective and the ENGINEER may require the CONTRACTOR to remove the substituted material, article or piece of equipment and the CONTRACTOR shall bear any and all costs associated with the removal of the substituted item, including all engineering, inspection, testing or surveying costs incurred by the OWNER or the ENGINEER.

10.2 The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product named in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the OWNER. "Equal" products shall not be purchased or installed by the CONTRACTOR without the OWNER's written approval. CONTRACTOR shall have fourteen (14) days after issuance of Notice to Proceed for submission of data substantiating a request for substitution of an "or equal" item.

11.0 PATENTS

11.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and indemnify and hold the OWNER and ENGINEER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

12.0 SURVEYS, PERMITS, REGULATIONS

12.1 The ENGINEER shall have completed all boundary surveys and established base lines for locating the principal component parts of the WORK together with a suitable number of survey control point adjacent to the WORK as shown in the CONTRACT DOCUMENTS. The CONTRACTOR

shall locate in field and satisfy himself as to the accuracy of all measurements before constructing any permanent improvement and shall not take advantage of any errors, which may have been made in laying out the WORK. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and provide to the ENGINEER cut sheets with lines and elevations during stake out of all detail surveys needed for construction including, but not limited to property/right-of-way/easement boundaries, improvement centerlines, proposed locations where joining to existing, alignments, alignment offsets, utility grades, cut/fill depths, top/toe of slopes, and horizontal/vertical points provided in CONTRACT DOCUMENTS.

12.2 In the event the CONTRACTOR, or his employees, destroy or otherwise remove or obliterate control points or property pins, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the CONTRACTOR at the discretion of the OWNER.

12.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR perceives that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 16. CHANGES IN THE WORK. If the CONTRACTOR performs and works knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the ENGINEER, he shall assume full responsibility therefore and shall bear all costs attributable thereto.

13.0 PROTECTION OF WORK, PROPERTY AND PERSONS

13.1 The CONTRACTOR shall have sole responsibility for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to, all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and other items not designated for removal, relocation or replacement in the course of construction.

13.2 The CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He shall erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He shall notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR shall remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them

may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

13.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. He shall give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be negotiated and issued covering the changes and deviations involved, as provided in Section 16.0, Changes in the Work.

13.4 The CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents and the safety of all those at the site. The person shall be the CONTRACTOR's superintendent unless otherwise designated by the CONTRACTOR in writing to the OWNER and the ENGINEER. The ENGINEER will not be responsible for safety precautions and programs in connection with the WORK or for the CONTRACTOR's failure to properly perform his responsibilities with respect to initiating, maintaining and supervising all safety precautions and programs.

14.0 PUBLIC SAFETY

14.1 Whenever the CONTRACTOR'S operations create a condition hazardous to traffic or to the public, he shall furnish at his own expense, and without cost to the OWNER, such flagmen and guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered and he shall furnish, erect, and maintain such fences, barricades, lights, signs, and other devices as are necessary to prevent accidents and avoid damage or injury to the public.

14.2 Should the CONTRACTOR appear to be neglectful or negligent in furnishing warning and protective measures as above provided, the ENGINEER may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed by the CONTRACTOR at his own expense without cost to the OWNER. Should the ENGINEER point out the inadequacy of warning and protective measures, such action on the part of the ENGINEER shall not relieve the CONTRACTOR from responsibility for public safety or abrogate his obligation to furnish and pay for these devices.

14.3 Should the CONTRACTOR fail to, be neglectful, or be negligent in furnishing and/or maintaining warning and protective facilities as required herein, the OWNER may furnish and/or maintain such facilities and charge CONTRACTOR therefor by deducting the cost thereof from periodic progress payments due the CONTRACTOR as such costs are incurred by OWNER.

14.4 No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's WORK and at other times when construction operations are suspended for any reason, the CONTRACTOR shall remove all equipment and other obstructions from that portion of the right-of-way open for use by public traffic.

15.0 SUPERVISION BY CONTRACTOR

15.1 The CONTRACTOR shall supervise and direct the WORK, using his best skill and attention. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR shall employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site, and who shall have been approved by the ENGINEER, which approval shall not be unreasonably withheld. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to and by the supervisor shall be as binding as if given to and by the CONTRACTOR. The supervisor shall be present on the site at all times. The CONTRACTOR shall be responsible to the OWNER for the acts and omissions of the employees, subcontractors, and the agents and employees, and other persons performing any other WORK under the CONTRACT with the CONTRACTOR.

16.0 CHANGES IN THE WORK

16.1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Contract. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

16.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within fourteen (14) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

16.3 If the CONTRACTOR wishes to make a claim for an increase in the CONTRACT sum, he shall give the ENGINEER written notice thereof within fourteen (14) days after the occurrence of the event giving rise to such claim. This notice shall be given by the CONTRACTOR before proceeding to execute the WORK, except in an emergency endangering life or property, in which case CONTRACTOR shall proceed in accordance with the provisions of the CONTRACT. No such claim shall be valid unless so made. If the OWNER and CONTRACTOR cannot agree on the amount of adjustment in the CONTRACT sum, it shall be determined by the ENGINEER. Any change in the CONTRACT sum resulting from such claim shall be authorized in a CHANGE ORDER.

16.4 The value of any WORK covered by a CHANGE ORDER shall be determined by one or more of the following methods in the order of precedence listed below:

A. Unit prices previously approved.
B. An agreed lump sum.
C. Cost plus percentage.

17.0 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

17.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

17.2 The CONTRACTOR shall proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

17.3 The CONTRACTOR shall only work an eight (8) hour day during normal regular hours, which will consist of Monday through Friday, 6:00 a.m. to 6:00 p.m., and do not include local municipal holidays. If the CONTRACTOR desires to carry on WORK more than eight (8) hours each day, or work at night or outside the normal regular hours, he shall give timely notice (72 hours) to the ENGINEER and receive the OWNER's written approval to allow satisfactory arrangements to be made for inspecting the WORK in progress. Should the prosecution of the WORK be discontinued for any reason, the CONTRACTOR shall notify the ENGINEER at least 24 hours in advance of resuming operations. The CONTRACTOR shall be responsible for any extra compensation due or costs incurred as a result of CONTRACTOR's desire to carry out WORK beyond an eight (8) hour day, or at night or outside normal regular hours, including but not limited to, any additional costs or compensation due the ENGINEER and OWNER or his employees or agents as a result of having to be present at the site. The costs or extra compensation necessitated by the CONTRACTOR's WORK beyond an eight (8) hour day, or at night or outside normal regular business hours may be deducted or withheld from progress payment or any other payments due to CONTRACTOR.

17.4 If for any reason a suspension of the work should occur; the CONTRACTOR, at his own expense, shall do all the WORK necessary to provide a safe, smooth and unobstructed passageway through construction for use by public traffic or to provide for the proper and efficient operation of sewer, drainage and other facilities within the site of the WORK, during the period of such suspension. In the event that the CONTRACTOR fails to perform the WORK specified in this Subsection, the OWNER will perform such WORK and the cost thereof will be deducted from periodic progress payments due the CONTRACTOR.

17.5 During inclement weather and other conditions, the CONTRACTOR shall pursue only such portions of the WORK as shall not be damaged thereby. No portions of the WORK whose satisfactory quality or efficiency will be affected by an unfavorable condition shall be constructed while these conditions remain, unless by special means or precautions, approved by the ENGINEER, the CONTRACTOR is able to overcome them.

17.6 Delays in delivery of equipment or material purchased by the CONTRACTOR or his SUBCONTRACTOR, including ENGINEER-selected equipment, shall not be considered as a just cause for delay as this is not beyond the control of the CONTRACTOR. The CONTRACTOR shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

17.7 In case of failure on the part of the CONTRACTOR to complete his contract within the time

affixed in the CONTRACT, or such extension thereof as may be allowed by ENGINEER or OWNER, the CONTRACT shall by that fact be terminated by written notice given by the ENGINEER as specified in paragraph 1.22 and 1.42 above. The OWNER shall not thereafter pay or allow the CONTRACTOR any further compensation for any WORK done by him under said CONTRACT, and the CONTRACTOR and his sureties shall be liable to the OWNER for all loss or damage which it may suffer by reason of his failure to complete the CONTRACT within such time. Failure to prosecute the WORK diligently shall be grounds for termination by the OWNER pursuant to this paragraph.

In the event the CONTRACT should be terminated, the OWNER shall have the right to take over the WORK and to proceed with the same until it is completed, either by performing said WORK itself directly or by contracting it out to some other person or persons, and in such event the OWNER may take possession of and utilize, in completing the WORK, such materials, appliances and plant as may be on the site of the WORK and necessary for its completion. Nothing herein contained shall be deemed to limit the right of the OWNER in the event of any breach of Contract by the CONTRACTOR; but all rights herein given to the OWNER are and shall be deemed to be additional to any other rights or remedies which the OWNER shall have under any provision of law.

17.8 Should the CONTRACTOR fail to complete the WORK, or any part thereof, in the time agreed upon in the CONTRACT or within such extra time as may have been allowed for delays by extensions granted as provided in the CONTRACT, the CONTRACTOR shall reimburse the OWNER for the additional expense and damage for each calendar day that the CONTRACT remains uncompleted after the CONTRACT completion date. It is agreed that the amount of such additional expense and damage incurred by reason of failure to complete the WORK is the per diem rate, as stipulated in SECTION 15, INFORMATION FOR BIDDERS, plus any costs incurred by the ENGINEER including, but not limited to: the ENGINEER's costs for additional inspection, testing or surveying as a result of the CONTRACTOR's failure to complete the WORK in the time agreed upon. The said amounts are hereby agreed upon as liquidated damages for the loss to the OWNER on account of expense due to the employment of ENGINEERS, inspectors, and other employees after the expiration of the time of completion, and on account of the value of the operation of the WORKS dependent thereon. It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty, but as liquidated damages which have accrued against the CONTRACTOR. The OWNER shall have the right to deduct such damages from any amount due, or that may become due the CONTRACTOR, or the amount of such damages shall be due and collectible from the CONTRACTOR or his SURETY.

17.9 The CONTRACTOR shall not be charged with liquidated damages or any excess costs when the delay in completion of the WORK is due to any of the reasons set forth below provided the CONTRACTOR has given WRITTEN NOTICE of the delay within three (3) days of the occurrence of the cause of the delay to the OWNER or ENGINEER. In the event notice is not given as provided, liquidated damages may be assessed.

A. To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to: acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a separate contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather.

18.0 CORRECTION OF WORK

18.1 The CONTRACTOR shall promptly correct all WORK rejected by the ENGINEER as defective or as failing to conform to the CONTRACT DOCUMENTS, whether observed before or after substantial completion and whether or not fabricated, installed or completed. CONTRACTOR shall bear all costs of correcting such rejected WORK, including compensation for the ENGINEER's additional services made necessary thereby. CONTRACTOR shall also bear the costs of making good all WORK of the OWNER or separate CONTRACTOR destroyed or damaged by such correction or removal.

18.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR, including compensation for the ENGINEER'S additional services made necessary thereby.

19.0 SUBSURFACE CONDITIONS

19.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

A. Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

B. Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

19.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

20.0 SUSPENSION OF WORK, TERMINATION AND DELAY

20.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR shall resume that WORK on the date so fixed. The CONTRACTOR shall be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

20.2 In addition to any other reasons for termination provided in the CONTRACT, the CONTRACTOR shall be considered in default of his CONTRACT and such default will be considered

as cause for the OWNER to terminate the CONTRACT for any of the following reasons if the CONTRACTOR:

A. Fails to begin the WORK under the CONTRACT within the time specified in the "NOTICE TO PROCEED," or

B. Fails to perform the WORK or fails to provide sufficient workers, equipment or materials to assure completion of WORK in accordance with the terms of the CONTRACT, or

C. Performs the WORK unsuitably or neglects or refuses to remove materials or to perform such new WORK as may be rejected as unacceptable and unsuitable, or

D. Discontinues the prosecution of the WORK, or

E. Fails to resume WORK which has been discontinued within a reasonable time after notice to do so, or

F. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

G. Allows any final judgment to stand against him unsatisfied for a period of 10 days, or

H. Makes an assignment for the benefit of creditors, or acceptable manner, or

I. Is otherwise in breach of the CONTRACT and has failed to remedy the breach within ten (10) days of written notice of the existence of such breach, or

J. Fails to provide safe conditions for his workers and/or the general public, or

K. Fails to pay his subcontractors in accordance with subsection 22.0 Payments to Contractor.

Should the OWNER consider the CONTRACTOR in default of the CONTRACT for any reason hereinbefore, he shall immediately give written notice to the CONTRACTOR and the CONTRACTOR'S surety as to the reasons for considering the CONTRACTOR in default and the OWNER'S intentions to terminate the CONTRACT.

If the CONTRACTOR or SURETY, within a period of 10 days after such notice, does not proceed in accordance therewith, then the OWNER shall have, upon written notification of the facts of such delay or neglect, the power and authority without violating the CONTRACT, to take the prosecution of the WORK out of the hands of the CONTRACTOR. The OWNER may appropriate or use any or all materials and equipment that have been mobilized for use in the WORK and are acceptable and may enter into an Contract for the completion of said CONTRACT according to the terms and provisions thereof, or use such other methods as in the opinion of the OWNER will be required for the completion of said CONTRACT in an acceptable manner.

All costs and charges incurred by the OWNER, together with the cost of completing the WORK under CONTRACT, will be deducted from any monies due or which may come due the CONTRACTOR. If such expense exceeds the sum which would have been payable under the CONTRACT, then the CONTRACTOR and the SURETY shall pay to the OWNER the amount of such excess.

20.3 Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

20.4 Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

20.4.1 for completed and acceptable WORK executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such work;

20.4.2 for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead on such expenses;

20.4.3 for reasonable costs incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

20.4.4 for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

20.5 If the WORK should be stopped under an order of any court or other public authority for a period of more than ninety (90) days, through no act or fault of the CONTRACTOR or of anyone employed by him, or if the OWNER should fail to pay the CONTRACTOR within 45 days after the time specified in the Payments To Contractor, Section 22.0, then the CONTRACTOR may, upon 15 days WRITTEN NOTICE to the OWNER, stop WORK until payment of the amount owing has been received.

20.6 The OWNER may terminate the contract or a portion thereof if conditions encountered during the progress of the work make it impossible or impracticable to proceed with the work or a local or national emergency exists.

When contracts, or any portion thereof, are terminated before completion of all work in the contract, adjustments in the amount bid for the pay items will be made on the actual quantity of work performed and accepted, or as mutually agreed for pay items of work partially completed or not started. No claim for loss of anticipated profits will be considered.

Termination of the contract or any portion thereof shall not relieve the Contractor of his responsibilities for the completed work nor the surety of its obligation for and concerning any just claims arising out of the work performed.

21.0 ISSUANCE OF NOTICE OF COMPLETION AND FINAL ACCEPTANCE BY OWNER

21.1 Upon completion of the PROJECT, a FINAL INSPECTION shall be requested by the CONTRACTOR in writing and the OWNER will make an inspection within seven (7) days. If all construction provided for and contemplated by the contract is found completed to his satisfaction, that inspection shall constitute the final inspection and the OWNER will make the final acceptance and issue a NOTICE OF COMPLETION to the CONTRACTOR.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the OWNER will give the CONTRACTOR the necessary instructions for correction of same, and the CONTRACTOR shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the OWNER will make the final acceptance and issue a NOTICE OF COMPLETION to the CONTRACTOR.

22.0 PAYMENTS TO CONTRACTOR

22.1 In addition to any documents required by the ENGINEER to be submitted to ENGINEER at the time a partial pay estimate is submitted, including partial lien released as specified in Section 22.9 of the General Conditions**,** the CONTRACTOR shall, at least ten (10) days before each progress payment falls due (but not more often than once a month), submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK, title to such materials and equipment shall vest in the OWNER, and CONTRACTOR shall supply, at the time of submission of payment estimate, supporting documents satisfactory to the OWNER, to establish and protect OWNER's interest in the materials and equipment, and CONTRACTOR shall maintain appropriate insurance on same until such time as actual possession by the OWNER of the materials and equipment shall occur. The ENGINEER will, within seven (7) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within fourteen (14) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all WORK covered by the CONTRACT DOCUMENTS. When the CONTRACT is fifty percent completed, one-half of the amount retained shall be paid to the CONTRACTOR provided the CONTRACTOR makes a written request for the payment and the CONTRACTOR is making satisfactory progress on the CONTRACT and there is no specific cause or claim requiring a greater amount to be retained. After the CONTRACT is fifty per

cent completed, no more than five per cent of the amount of any subsequent progress payments made under the CONTRACT may be retained providing the CONTRACTOR is making satisfactory progress on the project, except that if at any time the OWNER determines satisfactory progress is not being made, ten per cent retention shall be reinstated for all progress payments made under the CONTRACT subsequent to the determination.

22.2 In lieu of ten percent (10%) retention provided for in paragraph 22.1, of this Article, the Owner shall, at the Contractor's option, accept as a substitute an assignment of any of the following:

A. Time certificates of deposit of banks licensed by the State of Arizona; or

B. Securities of or guaranteed by the United States of America; or

C. Securities of the State of Arizona, or any county, municipality or school district thereof; or

D. Shares of savings and loan institutions authorized to transact business in the State of Arizona.

Such assigned instruments shall have a face value in an amount equal to ten percent (10%) of the progress payment for which such instruments are tendered and shall be retained by the Owner as a guarantee for complete performance of the Contract.

In the event the Owner accepts substitute security as provided herein for the ten percent (10%) retention, the Contractor shall be entitled to all interest or income earned by such security, and all such security in lieu of retention shall be returned to the Contractor within sixty (60) days after final completion and acceptance of all material, equipment and work covered by the contract if the Contractor has furnished the Owner satisfactory receipts for all labor and material billed and waivers of liens from any and all persons holding claims against the work.

In no event shall the Owner accept a time certificate of deposit of a bank or shares of a savings and loan institution in lieu of the retention specified in paragraph 22.1 of this Article unless accompanied by a signed and acknowledged waiver of the bank or savings and loan institution of any right or power to set off against either the Owner or the Contractor in relationship to the certificates or shares assigned.

22.3 The CONTRACTOR shall promptly pay each SUBCONTRACTOR, upon receipt of payment from the OWNER out of the amount paid to the CONTRACTOR on account of such SUBCONTRACTORS' WORK, the amount to which said SUBCONTRACTOR is entitled, reflecting the percentage actually retained, if any, from payments to the CONTRACTOR on account of such SUBCONTRACTORS' WORK. The CONTRACTOR shall, by an appropriate Contract with each SUBCONTRACTOR, require each SUBCONTRACTOR to make payments to his Sub-subcontractors in similar manner.

22.4 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed

portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

22.5 The OWNER shall have the right to enter the premises for the purpose of doing WORK not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

22.6 Upon final completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. No retention of payments may be delayed or retained without a specific written finding by the ENGINEER or OWNER of the reasons justifying the delay in payment. The entire balance found to be due the CONTRACTOR, including the retained percentages, except the amount necessary to pay the expenses the OWNER reasonably expected to incur in order to pay or discharge the expenses determined by the ENGINEER or OWNER in the finding justifying the retention or delay, shall be paid to the CONTRACTOR, within sixty (60) days of completion or proper filing of the Notice of Completion.

22.7 The CONTRACTOR shall indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence, in the form of lien releases or other documents deemed appropriate by the OWNER, that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

22.8 If any payment to CONTRACTOR is delayed after the date due, interest shall be paid at the rate of one percent per month or fraction of a month on such unpaid balance as may be due. If the OWNER fails to make payment sixty (60) days after final completion and acceptance, in addition to other remedies available to the CONTRACTOR, interest shall be paid at the rate of one per cent per month or fraction of the month on such unpaid balance as may be due, except for that amount necessary to pay the expenses the OWNER reasonably expects to incur in order to pay or discharge the expense determined by the ENGINEER or OWNER in the finding justifying the retention or delay.

22.9 The OWNER may require the Contractor to furnish partial releases or liens executed by all persons, firms and corporations who have furnished labor services or materials incorporated into the Work during the period of time for which the progress payment is due, releasing such lien rights as these persons, firms or corporations may have for that period. If any of

the laborers, subcontractors, or materialmen shall serve upon the OWNER a "Notice to Owner", or shall otherwise put the OWNER on notice that they are owed any unpaid money by the CONTRACTOR, the OWNER shall have the right to pay these persons directly, and the OWNER shall receive a credit therefor upon the Contract Sum.

23.0 ACCEPTANCE OF FINAL PAYMENT AS RELEASE

23.1 Upon completion of the PROJECT, a FINAL INSPECTION shall be requested by the CONTRACTOR in writing. Upon receipt of the FINAL INSPECTION request, the ENGINEER shall conduct a FINAL INSPECTION. If the work is not complete, the ENGINEER shall issue a letter of findings to the CONTRACTOR, and upon completion the CONTRACTOR shall submit another request for FINAL INSPECTION in writing. Following the OWNER'S acceptance of the WORK, the OWNER will issue a Notice of Completion to the CONTRACTOR. Sixty days after the issuing of the Notice of Completion, and upon receipt of the necessary UNCONDITIONAL lien releases executed by all persons, firms and corporations who have furnished labor services or materials incorporated into the work evidencing that all liabilities have been fully discharged, the OWNER will pay to the CONTRACTOR the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the CONTRACT. All previous prior partial estimates and payments shall be subject to correction in the final estimate and payment.

23.2 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

24.0 INSURANCE

24.1 The CONTRACTOR shall give special attention to Section 00500-A of the Bid Documents when preparing a bid, which outline the most current insurance requirements of Town of Quartzsite and the CONTRACTOR shall consider these insurance requirements part of the Bid/Contract documents.

The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

A. Claims under worker's compensation, disability benefit and other similar employee benefit acts;

B. Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

C. Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

D. Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

E. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

The CONTRACTOR is responsible to respond to claims arising as a result of their work. See Section 500-B for specific procedures.

24.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least ten (10) days prior WRITTEN NOTICE has been given to the OWNER.

24.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as specified in Section 500-A, incorporated herein.

25.0 CONTRACT SECURITY

25.1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and Contracts of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

26.0 ASSIGNMENTS

26.1 Neither the CONTRACTOR nor the OWNER shall 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. Nor shall the CONTRACTOR assign any monies due or to become due to him hereunder without the previous written consent of the OWNER.

26.2 The OWNER and CONTRACTOR each bind himself, his partners, successors and assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, Contracts and obligations contained in the CONTRACT DOCUMENTS.

27.0 INDEMNIFICATION

27.1 Contractor shall indemnify and hold harmless Town, its officers and employees from and against any and all liabilities, damages, losses, and costs, including reasonable attorney's fees, but only to the extent caused by the negligence, recklessness, or intentional wrongful conduct of Contractor or other persons employed or used by the Contractor in the performance of this Contract. It is agreed that Contractor will be responsible for primary loss investigation, defense, and judgment costs where this indemnification is applicable.

27.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation of benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under worker's compensation acts, disability benefit acts or other employee benefits acts.

27.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

28.0 SEPARATE CONTRACTS

28.1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

28.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR shall afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional

WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

28.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefore as provided in Sections 16 and 17.

29.0 SUBCONTRACTING

29.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which come under normal contracting practices or are typically performed by specialty SUBCONTRACTORS, provided the CONTRACTOR, simultaneously with the delivery of the executed CONTRACT, shall furnish to the OWNER and the ENGINEER in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the WORK. The engineer will promptly reply to the CONTRACTOR in writing stating whether or not the OWNER or the ENGINEER, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the OWNER or ENGINEER to promptly reply shall constitute notice of no reasonable objection. The CONTRACTOR shall not contract with any such proposed person or entity to whom the OWNER or ENGINEER has made reasonable objection and the CONTRACTOR shall not be required to contract with anyone to whom he has a reasonable objection. If the OWNER or ENGINEER has a reasonable objection to any proposed person or entity, the CONTRACTOR shall submit a substitute to whom the OWNER or the ENGINEER has no reasonable objection. The CONTRACTOR shall make no substitution for any SUBCONTRACTOR, person or entity previously selected if the OWNER or ENGINEER makes reasonable objection to such substitution.

29.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of forty-nine (49%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

29.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

29.4 The CONTRACTOR shall not employ any SUBCONTRACTORS that are not properly licensed with Town of Quartzsite and the State of Arizona. Changes of SUBCONTRACTORS listed with the PROPOSAL shall be made only with the approval of the OWNER.

29.5 Nothing contained in these CONTRACT DOCUMENTS shall be construed as creating any contractual relationship between any SUBCONTRACTOR and the OWNER; the CONTRACTOR shall be as fully responsible to the OWNER for the acts and omissions of SUBCONTRACTORS, and of persons employed by them, as he is for the acts and omissions of persons directly employed by him.

29.6 The CONTRACTOR shall, without additional expense to the OWNER, utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which are specified or required by State or local laws to be performed by specialty SUBCONTRACTORS.

29.7 The CONTRACTOR shall be responsible for the coordination of all trades, SUBCONTRACTORS, material and people engaged upon this WORK. The OWNER will not undertake to settle any differences between the CONTRACTOR and his SUBCONTRACTORS or between SUBCONTRACTORS.

29.8 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

29.9 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

30.0 ENGINEER'S AUTHORITY

30.1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make periodic visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

30.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

30.3 The ENGINEER shall not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety precautions and programs in connection with the WORK and he will not be responsible for the CONTRACTOR's failure to carry out the WORK in accordance with the CONTRACT DOCUMENTS. The ENGINEER shall not be responsible or have control or charge over the acts or omissions of the SUBCONTRACTORS, or any of their agents or employees, or any other person performing any of the WORK.

30.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

30.5 The ENGINEER will have the authority to reject WORK which does not conform to the CONTRACT DOCUMENTS. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the CONTRACT DOCUMENTS, he will have authority to require special inspection or testing of the WORK in accordance with the other terms of this CONTRACT whether or not such WORK be then fabricated, installed or completed.

31.0 LAND AND RIGHTS-OF-WAY

31.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

31.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

31.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

32.0 GUARANTEE

32.1 Except as otherwise specified, all WORK shall be guaranteed by the CONTRACTOR against defects resulting from the use of inferior materials, equipment, or workmanship for a period of one (1) year from the date the Notice of Completion is issued by the OWNER, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the CONTRACT DOCUMENTS.

32.2 If, within any guarantee period, repairs or changes are required in connection with guaranteed WORK, which, in the opinion of the OWNER, is rendered necessary as the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the CONTRACT, the CONTRACTOR shall, promptly upon receipt of notice from the OWNER, and without expense, (1) place in satisfactory condition in every particular all of such guaranteed WORK, correcting all defects therein; (2) make good all damage to the building, site or WORK, or equipment or contents thereof, which in the opinion of the OWNER, is the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract; and (3) make good any WORK or material, or the equipment and contents of said building, site or WORK disturbed in fulfilling any such guarantee. If the CONTRACTOR, after notice, fails to proceed promptly to comply with the terms of the guarantee, the OWNER may have the defects corrected and the CONTRACTOR and his surety shall be liable for all expense incurred. The PERFORMANCE BOND shall remain in full force and effect through the guarantee period.

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GUARANTEE

32.3 The Contractor agrees to execute, and to cause each Subcontractor to execute, a written guarantee to the Owner, in substantially the following form:

GUARANTEE FOR:

We hereby guarantee, both jointly and severally, that the improvement which we have installed for the Owner of Project, specifically described as:

WATER MAIN REPLACEMENTS, PROJECT NO. WT3080

has been done in accordance with the Contract Drawings and Specifications.

We agree, both jointly and severally, to repair and replace any or all Work included in said improvement, together with any other adjacent work which may be displaced or damaged by so doing, that may prove to be defective in its workmanship or material within a period of one year from date of acceptance of the above mentioned improvement by the Engineer on behalf of the Owner, ordinary wear and tear and unusual abuse or neglect accepted.

In the event of our failure to comply with the above mentioned conditions within a reasonable period of time (as determined by the Owner) after being notified in writing by the Owner, we both jointly and severally, do hereby authorize the Owner to proceed to have said defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed _____

Countersigned _____

Local Representative to be contacted for service:

Name _____

Address _____

Phone No. _____

FAX _____

The guarantee form(s) shall be completed and returned with the acknowledgement of the Certificate of Completion.

The failure of the Contractor or any Subcontractor to execute, such guarantee shall not affect the right of the Owner to rely on and enforce the guarantee and the obligations respectively assumed by the Contractor and each Subcontractor under Subparagraph 32.1 and 32.2 hereof.

33.0 ARBITRATION

33.1 Provided both parties mutually agree, all claims, disputes and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 23, may be decided by arbitration in accordance with the American Arbitration Association or any other similar body. The foregoing Contract to arbitrate shall be specifically enforceable under the prevailing arbitration law (12-1501 et. seq.) of the State of Arizona. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

33.2 Notice of the demand for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and with the American Arbitration Association and a copy shall be filed with the ENGINEER. The party filing for arbitration may select which arbitration service to use. Demand for arbitration shall in no event by made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

33.3 The CONTRACTOR shall carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

33.4 The provisions of the CONTRACT pertaining to arbitration are not binding upon ENGINEER and ENGINEER cannot be compelled to participate against his will in an arbitration arising out of a dispute over the CONTRACT or CONTRACT DOCUMENTS unless ENGINEER so consents in writing to be a party to the arbitration.

34.0 TAXES AND CHARGES

34.1 The CONTRACTOR shall pay all State and local sales and use taxes on items, and in a manner as required by the laws and statutes of the State of Arizona and its political subdivisions. The CONTRACTOR shall withhold and pay any and all withholding taxes, whether State or Federal, and pay all Social Security charges, State Unemployment Compensation charges, industrial insurance, workers compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, or fees, or sums whatsoever, which are now or may hereafter be required to be paid or withheld under any laws.

35.0 MISCELLANEOUS CONDITIONS

35.1 In the event that either party to the CONTRACT is required to institute arbitration or litigation to enforce its rights under the terms of the CONTRACT, then the prevailing party in the arbitration or litigation shall be entitled to recover all costs and attorney's fees incurred.

35.2 In the event that any provision contained in the CONTRACT is found to be contrary to the applicable law, then it shall be severed and the remaining provisions of the CONTRACT shall remain in full force and effect.

35.3 The CONTRACT shall be governed by the law of the State of Arizona.

36.0 CONFLICTS WITHIN THE PLANS OR SPECIFICATIONS

36.1 In the event that a conflict is discovered between sections of the Specifications or between the Plans and the Specifications, the following list of priority shall be used to resolve the conflict:

A. EXECUTED CHANGE ORDERS
B. ADDENDA
C. CONTRACT
D. SPECIAL PROVISIONS
E. GENERAL CONDITIONS
F. INSTRUCTIONS TO BIDDERS
G. TECHNICAL SPECIFICATIONS
H. PLANS
I. Referenced Standard Specifications or Other Documents

37.0 NONDISCRIMINATION

37.1 The CONTRACTOR, with regard to the work performed pursuant to this contract, shall not discriminate on the grounds of race, color, sex, religion, creed, age, physical or mental disability, or national origin or ancestry in any contracts with the public and in the selection and retention of employees or subcontractors, nor in the procurement of materials and leases of equipment.

38.0 INTEGRATION

38.1 This CONTRACT represents the entire Contract between the parties hereto and supersedes any and all prior negotiations or representations, either written or oral.

38.2 Amendments or modifications to the CONTRACT shall be in writing, signed by both parties, or by Change Orders.

38.3 The Contract Documents shall not be construed to create any contractual relationship of any kind between the ENGINEER and the CONTRACTOR, but the ENGINEER shall be entitled to performance of obligations intended for his benefit, and to the enforcement thereof.

38.4 Nothing contained in the CONTRACT DOCUMENTS shall create any contractual relationship between the OWNER or the ENGINEER and any SUBCONTRACTOR or SUB-SUBCONTRACTOR.

39.0 HAZARD COMMUNICATION PROGRAM

39.1 All contractors working on Town projects shall submit a copy of their hazard communication plan to the Fire Prevention Office prior to commencement of work on any project. This will ensure that other individuals on the job site are not unknowingly exposed to a hazardous substance or chemical.

The Fire Prevention Office shall be provided a list of the hazardous substances and the material safety data sheets that are applicable to the work areas of those contract employees.

All contract labor within Town facilities will be treated the same as regular employees with regard to this hazard communication standard.

** END OF SECTION **

SECTION 00800

SPECIAL PROVISIONS

1.0 SCOPE

These Special Provisions supplement and modify the General Conditions, Technical Specifications, and Plans. All requirements and provisions of the General Conditions, Technical Specifications and Plans apply except where modified by these Special Provisions.

2.0 PROJECT DESCRIPTION

S SCOTT LANE SEWER LINE EXTENSION

Special instructions regarding the various portions of the project are included in these Special Provisions.

3.0 DEFINITION OF TERMS

Wherever in these documents the word "**OWNER**" appears, it shall be understood to mean Town of Quartzsite, Arizona, the governing body of which is the Town Council. Wherever in these documents the word "CONTRACTOR" appears, it shall be understood to mean the party or parties contracting with the **OWNER** to perform the Work. Wherever in these documents the word "ENGINEER" appears, it shall be understood to mean Town of Quartzsite Public Works Department, Engineering Division.

4.0 PRECONSTRUCTION CONFERENCE

Within ten (10) days after the contract has been awarded, but before the start of construction, the ENGINEER will schedule a conference to be held at the site of the project for the purpose of discussing such matters as project supervision, onsite inspections, progress schedules and reports, payrolls, payments to CONTRACTORs, equal employment opportunity, contract change orders, insurance, safety, and any other items pertinent to the project. The CONTRACTOR shall arrange to have all supervisory personnel connected with the project on hand to meet with the representatives of the **OWNER** and the Engineer.

5.0 COMPLIANCE WITH LAWS AND LABOR MATERIAL REQUIREMENTS

The CONTRACTOR shall conduct the work in compliance with all existing state and national laws and county and municipal ordinance and regulations limiting or controlling the work in any manner. Particular attention is called to the following State of Arizona laws:

WORKMAN'S COMPENSATION INSURANCE All personnel working on the project shall be covered by Workmen's Compensation Insurance as provided or approved by the Arizona Industrial Commission in accordance with ARS 23-901 et. seq.

EMPLOYMENT OF ALIENS Employment of aliens on Public Works projects prohibited. ARS 34-301 and residence requirements for employees, ARS 34-302.

The CONTRACTOR understands and acknowledges the applicability to it of the American with Disabilities Act, the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act of 1989. The following is only applicable to construction contracts: The CONTRACTOR must also comply with A.R.S. § 34-301, "Employment of Aliens on Public Works Prohibited", and A.R.S. § 34-302, as amended, "Residence Requirements for Employees".

Under the provisions of A.R.S. §41-4401, CONTRACTOR hereby warrants to the Town that the CONTRACTOR and each of its subcontractors ("Subcontractors") will comply with, and are contractually obligated to comply with, all Federal Immigration laws and regulations that relate to their employees and A.R.S. §23-214(A) (hereinafter "Contractor Immigration Warranty").

A breach of the Contractor Immigration Warranty shall constitute a material breach of this Contract and shall subject the CONTRACTOR to penalties up to and including termination of this Contract at the sole discretion of the Town.

The Town retains the legal right to inspect the papers of any CONTRACTOR or Subcontractors employee who works on this Contract to ensure that the CONTRACTOR or Subcontractor is complying with the Contractor Immigration Warranty. CONTRACTOR agrees to assist the Town in regard to any such inspections.

The Town may, at its sole discretion, conduct random verification of the employment records of the CONTRACTOR and any of subcontractors to ensure compliance with Contractor's Immigration Warranty. CONTRACTOR agrees to assist the Town in regard to any random verifications performed.

Neither the CONTRACTOR nor any of Subcontractor shall be deemed to have materially breached the Contractor Immigration Warranty if the CONTRACTOR or Subcontractor establishes that it has complied with the employment verification provisions prescribed by sections 274A and 274B of the Federal Immigration and Nationality Act and the E-Verify requirements prescribed by A.R.S. §23-214, Subsection A.

The provisions of this Article must be included in any contract the CONTRACTOR enters into with any and all of its subcontractors who provide services under this Contract or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by a CONTRACTOR or subcontractor. Services include construction or maintenance of any structure, building or transportation facility or improvement to real property.

6.0 COPIES OF DOCUMENTS

The **OWNER** will furnish to the CONTRACTOR one electronic copy of the Contract Documents in pdf format, unless otherwise requested.

7.0 DRAWINGS OF RECORD

Two sets of the Contract Documents are to be kept at the job site, maintained in good condition, and marked daily by the CONTRACTOR as the work proceeds. The Contract Documents shall be kept available for inspection by the **OWNER** at all times, and shall be kept up to date.

8.0 CONTRACT TIME

The contract time for this project is **60 calendar days** after issuance of the NOTICE TO PROCEED for final completion.

9.0 SURVEYS

The CONTRACTOR shall layout the WORK, in accordance with the drawings, shall establish all necessary lines, etc., required to complete the work in accordance with the Contract Documents. The CONTRACTOR shall employ an experienced and competent Arizona Registered Land Surveyor (R.L.S.) or Professional Engineer (Civil) satisfactory to the **OWNER** to layout the WORK and to verify lines and elevations as the WORK progresses. It is the responsibility of the CONTRACTOR, at no expense to the **OWNER**, to layout the WORK to the accuracy described in these contract documents and to perform the quality control necessary to verify its accuracy, if questioned by the **OWNER**. CONTRACTOR shall use an experienced and competent Arizona Registered Land Surveyor (R.L.S.) for any survey work related to property boundaries or reestablishment of corners disturbed during construction.

10.0 WEATHER CONDITIONS

In the event of temporary suspension of work, or during inclement weather, or whenever the **OWNER** shall direct, the CONTRACTOR will and will cause his Subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the **OWNER**, any work or materials shall have been damaged or injured by reason of failure on the part of the CONTRACTOR or any of his subcontractors to so protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.

11.0 SUBMITTALS

Prior to construction and as soon as possible, the CONTRACTOR shall supply all submittals required by the Technical Specifications or as requested by the **OWNER**.

12.0 INSPECTION OF THE WORK

The **OWNER** intends to provide a full-time resident inspector for the project. The resident inspector will be available for a forty (40) hour period during the week from Monday through Friday during the period of the Contract. In the event the CONTRACTOR elects to work outside the forty (40) hour week that occurs between Monday through Friday, such as Saturday, Sunday or legal holidays, in accordance with Section 17.0 of the General Conditions the CONTRACTOR will be responsible for all inspection, engineering, and testing costs incurred during that period. For any inspection work performed on Saturday, Sunday, or local municipal holidays the minimum chargeable time shall be four (4) hours. The **OWNER** reserves the right to deduct these additional inspection, engineering, and testing costs directly from the CONTRACTOR's payments.

13.0 WATER AND POWER

A. WATER

Water is available from the Water Department at no cost to the CONTRACTOR. The CONTRACTOR shall make application and obtain a hydrant meter from the Water Department for the purpose of metering the use of water on the project. The CONTRACTOR shall adhere to all conditions stated in the Meter Application, including payment of a deposit for the meter, return of the meter to the Water Department each month during the project for reading, and notification to the Water Department prior to any change in the location of the hydrant meter. The maximum water to be drawn off a hydrant at any time is 200 gpm (water drawn from 4" hydrant whenever available). Water shall only be drawn off hydrants approved by the Lake Havasu Town Water Superintendent or his authorized representative.

B. POWER

All power for lighting, operation of CONTRACTOR's plant or equipment or for any other use as may be required for proper completion of the work to be performed under the provisions of these contract documents, shall be provided by the CONTRACTOR at his sole cost and expense.

14.0 BURNING OF VEGETATION

No burning of vegetation will be allowed.

15.0 MATERIALS TESTING

A. CONSTRUCTION TESTING

All quality control testing must be provided by CONTRACTOR. The material and workmanship provided during construction will be tested on a regular basis by the CONTRACTOR. It shall be the responsibility of the CONTRACTOR, at no additional cost, to provide material samples for testing at the **OWNER's** request.

The CONTRACTOR shall be responsible for charges resulting from failed tests, costs for retesting shall be based upon hourly and/or individual test rates.

In the event any portion of the project is rejected because of substandard work, all materials testing, engineering, and inspection costs associated with corrective measures shall be chargeable to the CONTRACTOR at the current respective rates.

B. PRELIMINARY MATERIALS TESTING

All preliminary materials testing and mix design testing required by the specifications to ensure materials and mix designs are suitable for project use will be the responsibility of the CONTRACTOR at no additional cost to the **OWNER**.

16.0 CLEANUP AND POLLUTION CONTROL

A. GENERAL

The CONTRACTOR shall be responsible for the removal of all debris, litter and waste from the job site(s) and/or equipment maintenance area and the restoration of any and all areas affected, directly or indirectly by the construction, transportation of equipment or materials and/or by the acts of neglect or omission by his employees.

All debris, litter, etc., shall be disposed of in accordance with prevailing ordinance or law. Open burning of trash, debris, etc., will not be permitted.

Such clean-up operations shall be on a daily basis. All pavement, concrete, brush, rocks, excess materials, etc. accumulated or removed during the course of construction must be disposed of in those areas designated by the ENGINEER or his authorized representative, including but not limited to the Town of Quartzsite Landfill. All costs for disposal, including gate or tipping fees, etc. are the responsibility of the CONTRACTOR. This material must be disposed of within ten (10) days of time of removal. If the areas in question are not cleaned up to the satisfaction of the ENGINEER, progress payments will be withheld until clean-up is completed and approved by the ENGINEER, or, in the case of private projects, other legal action will be taken.

B. TEMPORARY FACILITIES

The CONTRACTOR shall provide temporary mailboxes and traffic control signs where necessary until completion of backfilling and clean-up.

C. SOLID WASTES

All solid wastes shall be removed and disposed of in accordance with prevailing ordinance or law. Clean-up shall be completed on a daily basis. All costs for disposal shall be the responsibility of the CONTRACTOR, and shall be considered incidental to the costs of the various bid items.

All spilled paving material shall be removed and disposed of prior to final acceptance and payment.

D. MAINTENANCE AREAS

Maintenance areas shall be kept clean during construction and shall be free of litter at all times. All empty containers, debris, waste, etc., shall be removed and disposed of prior to final acceptance. Upon inspection by the ENGINEER, the CONTRACTOR may be required to dress the surface of the ground, dependent upon the extent of spillage of petroleum products on the surface. If so directed, such dressing shall consist of scarifying the surface to a depth of six (6) inches and moving and compacting the soil in such a way as to blend the spill areas into clean soil and restore the surface by partial compaction.

E. POLLUTION

The CONTRACTOR shall be held responsible for acts leading to pollution of water, air or land by any means.

Open burning of trash, debris, etc., will not be permitted anywhere in the Town limits.

The discharge of any pollutants upon the surface of the ground, or into any stream, ravine, wash or body of water which may result in pollution of the public water supply, or of groundwater contributory thereto, will not be permitted.

Violation of these conditions will be cause for the termination of work, and possible legal action.

F. REMOVAL AND REPLACEMENT OF SIGNS, MAILBOXES, ETC.

It is the responsibility of the CONTRACTOR to remove all poles, etc. which are located within the construction area and replace at the time of backfilling and clean-up in the locations determined by the Street Superintendent. In the case of landscaping or other private items located in the construction area, the CONTRACTOR shall hand-deliver a written notice to all residences in that area stating his intentions to perform construction activities and shall do so at least five (5) working days prior to work commencing. If, at the time of construction these items are still in the construction area, the CONTRACTOR is to remove and dispose of them properly. All signs and mailboxes shall be permanently installed within forty-eight (48) hours of completion of construction activities.

G. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT

At the time of the preconstruction conference, the CONTRACTOR shall submit, for the ENGINEER's approval, a program which includes all the measures which the CONTRACTOR proposes to take for the construction of permanent erosion control work specified in the contract and all the temporary control measures to prevent erosion and pollution of streams, lakes and reservoirs.

Permanent erosion control work and pollution prevention measures shall be performed at the earliest practicable time consistent with good construction practices. Temporary work and measures are not meant to be performed in lieu of permanent work specified in the contract.

Construction of drainage facilities as well as the performance of other contract work which will contribute to the control of erosion and sedimentation shall be carried out in conjunction with earthwork operations or as soon thereafter as possible.

Except for that approved in writing by the ENGINEER, the CONTRACTOR shall perform no clearing and grubbing or earthwork until the CONTRACTOR's program has been approved.

If in the opinion of the ENGINEER, clearing and grubbing, excavation, or other construction operations are likely to create an erosion problem because of the exposure of erodible earth material, the ENGINEER may limit the surface area to be disturbed until satisfactory control

measures have been accomplished. Unless otherwise permitted by the ENGINEER, the CONTRACTOR shall not expose an area of erodible earth material greater than 217,800 square feet at any one location.

The ENGINEER may order the CONTRACTOR to provide immediate measures to control erosion and prevent pollution. Such measures may involve the construction of temporary berms, dikes, dams, sediment basins and slope drains; the use of temporary mulches, mats and seeds and the use of other devices, methods, items, etc., as necessary.

At any time the CONTRACTOR proposes to change his/her schedule of operations, the CONTRACTOR shall review and update his/her erosion and pollution control program and submit it to the ENGINEER for approval.

The CONTRACTOR shall not be entitled to additional compensation or an extension of contract time for any delays to the work because of the CONTRACTOR's failure to submit an acceptable erosion and pollution control program.

Erosion control and pollution prevention work specified in the contract which is to be accomplished under any of the various contract items will be paid for by the bid item.

The cost of any erosion control and pollution prevention work which may be proposed by the CONTRACTOR in his/her program, in addition to that specified in the contract, will be considered as included in the prices bid for contract items.

17.0 DUST CONTROL

It shall be the CONTRACTOR's responsibility to provide adequate water for dust control. It is imperative that the air quality standards are maintained. In addition, dust could be quite hazardous in the everyday operations. It shall be the CONTRACTOR's responsibility to ensure that all regulations for air quality and safety are met.

18.0 SUPERVISORY PERSONNEL

It is the intent of these Specifications to provide a completed project which will in every way reflect the work of competent journeyman mechanics in the various trades represented. The CONTRACTOR shall ensure that each portion of the work is supervised by a qualified person, well versed in the operation of the various tools required for the trade, the method in which the work is to be done, and a knowledge of the general requirements of the construction work. All work is to be done in accordance with the latest methods devised for such work to ensure the highest quality product.

19.0 SAFETY REQUIREMENTS

The CONTRACTOR shall comply with all pertinent provisions of the Department of Labor "Safety and Health Regulations for Construction" (29 CFR Part 1518, 36 CFR 7340), with additions or modifications thereto, in effect during construction of this project.

THE FOLLOWING MEASURES OR PROVISIONS ARE TO BE ADHERED TO AT ALL TIMES DURING THE CONSTRUCTION OF THIS PROJECT:

A. All heavy construction machinery to include trenching machines, bulldozers, backhoes, etc., must be equipped with a roll bar meeting the requirements of the above regulation.

B. Safety helmets will be worn by all personnel working at the site. In addition, all spectators and inspectors will be required to wear safety helmets in construction zone.

C. Steel toe safety shoes or boots will be worn by all personnel working at the site.

D. Approved safety glasses will be worn by all personnel working at the site.

E. Proper safety vest adhering to state standards will be worn by all personnel working at the site.

F. All workers' on site will be required to clearly display their name and company logo in a visible location.

The CONTRACTOR shall retain the services of a qualified Safety Officer, who has at minimum 10 hours of OSHA certified training. This officer shall, at minimum, visit the site on a weekly basis, or as directed by the ENGINEER, and provide a weekly Health and Safety report noting all the safety violations observed during that week. The CONTRACTOR shall address these violations immediately. If said violations continue to be noted on the weekly reports, the ENGINEER, at his discretion, may stop work or stop the Partial Engineer's Certificate of Completion (PECOC) approval process until such violations are addressed.

20.0 PRESERVATION OF BENCH MARKS AND MONUMENTS

The CONTRACTOR shall exercise caution to ensure that permanent bench marks, monuments, established property corners, survey lines, and points are not damaged or disturbed by this work. If any survey monuments, property corners, survey lines or points are damaged or disturbed, the CONTRACTOR's representative shall immediately notify the inspector. All centerline survey monumentation located in pavement removal areas shall be replaced by an Arizona Registered Land Surveyor (R.L.S.) after completion of the pavement removal and replacement operations. All costs incurred to re-establish such points shall be borne by the CONTRACTOR.

21.0 DISPOSAL OF EXCESS MATERIAL

Excess soil and unsuitable materials shall be removed from the site by the CONTRACTOR at his own expense and disposed of in accordance with the Contract Documents unless otherwise permitted herein. In the event the CONTRACTOR chooses to utilize local private lots to dispose of excess material, the CONTRACTOR must provide the ENGINEER with written permission from the lot owner prior to utilizing the lot. Placing material suitable for fill on vacant lots will require a Grading Permit in advance of placing the material.

22.0 REFERENCE STANDARD SPECIFICATIONS

Where standard specifications or testing methods have been referred to, such as ASTM or AASHTO, the intent is to refer to the latest applicable issue or revision of such specifications or testing methods. The following abbreviations are used in these specifications.

AWWA	American Waterworks Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AI	Asphalt Institute
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute (formerly the USA Standards Institute)
ASTM	American Society for Testing and Materials
NSF	National Sanitation Foundation
S.P.W.C.	Standard Specifications for Public Works Construction. (Wherever written herein shall mean "Maricopa Association of Governments, Arizona Specification for Public Works Construction".) The "Sample Forms" and "Part 100 – General Conditions" of these Standard Specifications for Public Works Construction are excluded from the documents for this project.

23.0 CODES, ORDINANCES AND LOCAL SPECIFICATIONS

All work under this project shall be performed in strict accordance with these specifications and the Standard Specifications for Public Works Construction (SPWC). Where any conflict occurs between these plans and specifications and the local codes and ordinances in effect at the time, such codes and ordinances shall take precedence over these plans and specifications only if these plans and specifications are inferior as to materials and workmanship called for by such codes and ordinances.

24.0 INTERFERING STRUCTURES AND UTILITIES

The CONTRACTOR shall notify Blue Stake (1-800-782-5348) at least three (3) working days prior to any excavations.

The CONTRACTOR shall exercise all possible caution to prevent damage to existing structures and utilities, whether above ground or underground. The CONTRACTOR shall notify all utility offices concerned at least seventy-two (72) hours in advance of construction operations in which a utility's facilities may be involved.

Any structure or utility damage caused by the work shall be repaired or replaced in a condition

equal to or better than the condition prior to the damage. Such repair or replacement shall be accomplished at the CONTRACTOR's expense without additional compensation from the **OWNER**.

If interfering structures or installations such as vaults, manholes, valves, utility poles, guy wires, or anchors are encountered, the CONTRACTOR shall notify the ENGINEER and contact the appropriate utility or structure owner at least seven (7) days in advance of construction to arrange for protection or relocation of the structure.

The CONTRACTOR shall remove, protect and/or replace all existing structures, utilities or other improvements and similar items within the proposed improvements at his own expense without additional compensation from the **OWNER** unless specifically provided for as a pay item of work by the Specifications or as otherwise provided for on the Plans. Replacement shall be in a manner and in a condition at least equivalent to, or better than, the original condition.

If the CONTRACTOR encounters existing facilities which will prevent the construction of any facility and which are not properly shown on the Plans, he shall notify the **OWNER** before continuing with the construction in order that the **OWNER** may make such field revisions as necessary to avoid conflict with the existing structure. The cost of waiting or "down" time during such field revision shall be borne by the CONTRACTOR without additional cost to the **OWNER**. If the CONTRACTOR fails to notify the **OWNER** when an existing structure is encountered, but proceeds with the construction despite this interference, he does so at his own risk. In particular, when the location of the new construction will prohibit the restoration of existing structures to their original condition; the CONTRACTOR shall notify the ENGINEER and contact the utility or structure owner so a field relocation may be made if possible to avoid the conflict.

In the event of interruption to any utility service as a result of accidental breakage or as a result of being exposed or unsupported, the CONTRACTOR shall promptly notify the proper authority. He shall cooperate with the said authority in restoration of service as promptly as possible and shall bear all costs of repair. In no case shall interruption of any utility service be allowed to exist outside working hours unless prior approval of the **OWNER** is received.

Neither the **OWNER** nor its officers or agents shall be responsible for damages to the CONTRACTOR as a result of the locations of the water and sewer lines or utilities being other than those shown on the Plans or for the existence of water, sewer lines or utilities not shown on the Plans.

25.0 AIR QUALITY - OPERATING PERMITS

The CONTRACTOR may be required to obtain registration certificates and/or operating permits for sources of air pollution.

Information concerning these certificates and permits may be obtained from:

The Office of Air Quality
Arizona Department of Environmental Quality
P.O. Box 600
Phoenix, AZ 85001-0600
(602) 207-2300

26.0 ADJUST UTILITIES TO FINISHED GRADE

The CONTRACTOR shall be responsible for locating all manhole rims, valve boxes, meter boxes, utility vaults, etc., and setting them to finished grade. The CONTRACTOR shall adjust sewer and water facilities to finished grade in accordance with the specifications within seven (7) days after street surfacing has been completed on each street. All valves and/or manholes will be made visible and accessible for emergency use within 24 hours. It shall be the responsibility of the CONTRACTOR to coordinate with the various private utility companies so that they can adjust their facilities to finished grade at an appropriate time. Adjust all facilities in accordance with these specifications and the MAG Standard Details, as modified by Town of Quartzsite.

27.0 SAFETY, HEALTH AND SANITATION PROVISIONS

The CONTRACTOR shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Arizona State Department of Health.

The CONTRACTOR shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility or as the **OWNER** may determine, reasonably necessary to protect the life and health of employees on the job, the safety of the public and to protect property in connection with the performance of the work covered by the contract.

Precaution shall be exercised by the CONTRACTOR at all times for the protection of persons (including employees) and property. The CONTRACTOR shall comply with the provisions of all applicable laws, pertaining to such protection including all Federal and State occupational safety and health acts, and standards and regulations promulgated thereunder.

28.0 PUBLIC SAFETY AND TRAFFIC CONTROL

Every attempt shall be made to provide public safety during the construction of the project. Traffic control shall be performed in accordance with Section 2650, Traffic Control, of the Technical Specifications.

During all construction operations, the CONTRACTOR shall construct and maintain such facilities as may be required to provide access for all property owners to their property. No person shall be cut off from access to his residence or place of business for a period exceeding two (2) hours, unless the CONTRACTOR has made a special arrangement with the affected persons. It shall be the CONTRACTOR's responsibility to notify all adjacent property owners of the construction activity and the schedule of such activities.

The CONTRACTOR shall submit for approval a traffic control and barricade plan within ten (10) days of receipt of Notification of Award of Contract. There shall be no deviations from the approved barricade plan unless a revised barricade plan is submitted and approved. The CONTRACTOR shall issue a news release once a week for duration of the project. The release will be published in Sunday's newspaper and shall indicate the area in which the CONTRACTOR will be performing work for that week.

Businesses must be notified forty-eight (48) hours prior to any restrictions on normal parking areas

used by their employees or patrons.

The CONTRACTOR shall contact, cooperate with, and give notice to each resident, homeowner, business or school that will be affected by any part of the construction process, particularly concerning temporary interruptions to vehicular access.

Written notice of the approximate schedule and explanation of work shall be given to each resident, homeowner, business or school at least five (5) days prior to commencement of work in the area. Verbal door-to-door communication shall be made at least twenty-four (24) hours prior to construction to remind all affected parties of the construction to take place.

The **OWNER** shall receive a copy of all notifications to residents. In the event of complaints by residents, the **OWNER** may require the CONTRACTOR to provide documentation (ie. check list) showing the date & time of the verbal door-to-door communication.

In addition, the CONTRACTOR is responsible to answer and resolve any conflicts that may arise between a homeowner or business owner and himself during the construction process.

The CONTRACTOR shall provide and station competent flaggers whose sole purpose shall be to direct the movement of public traffic through or around the work. Proper advanced warning signs shall be in place when flaggers are working and removed when work requiring flaggers is completed. Flaggers must be used to assist trucks for safe ingress and egress whenever truck movements may interfere with safe passage through the work zone.

All traffic control devices that are not in use or will not be used for a period greater than 72 hours or that are determined by the ENGINEER to be unnecessary, confusing, or causing an unsafe condition, shall be removed by the CONTRACTOR from the public right-of-way immediately upon notification by the ENGINEER.

Every attempt shall be made to provide public safety during the construction of the project. Traffic control shall be performed in accordance with Section 2650, Traffic Control, of the Technical Specifications. No person shall be cut off from access to his residence or place of business for a period exceeding six (6) hours, unless the Contractor has made a special arrangement with the affected persons. In addition, no work will be scheduled which will interrupt regular trash pickup to either residential or commercial properties. It will be the CONTRACTOR'S responsibility to coordinate his activities with the local trash haulers.

No streets, avenues, boulevards or cul-de-sacs will be closed to traffic unless prior arrangements have been made and approval has been obtained from the ENGINEER.

29.0 TEMPORARY FACILITIES ON SITE

A. General

Except as otherwise provided, the **OWNER** shall bear no costs of temporary facilities and their removal.

B. Temporary Utility Services

The CONTRACTOR shall provide temporary electric power as necessary for the execution of the Work, including that required by all Subcontractors. He shall make the necessary arrangements with **OWNER**, shall bear all costs for these temporary services and shall furnish and install all necessary transformers, metering facilities and distribution centers from branch circuits as he may require.

The CONTRACTOR shall provide lighting and outlets in temporary structures throughout the project as may be required for safety, proper performance and inspection of the Work. If operations are performed during hours of darkness, or if natural lighting is deemed insufficient by **OWNER**, the CONTRACTOR shall provide adequate floodlights, clusters and spot illumination. The use of permanently installed lighting fixtures, lamps and tubes for work will not be permitted except by special permission of **OWNER**. The CONTRACTOR shall make arrangements with Subcontractors for electrical services and lighting as may be necessary in the performance of their work.

Temporary water service lines, if required, shall be installed and removed by the CONTRACTOR, who shall pay all charges for making the connections, running the temporary lines, removing the temporary lines at the completion of the Work and disconnecting the services. All relocations required to clear the work of others shall be performed by the CONTRACTOR when requested by the **OWNER**.

C. Temporary Structures

Prior to starting Work, the CONTRACTOR shall, as directed by **OWNER**, provide and maintain suitable temporary office facilities for the duration of the Project as required for the CONTRACTOR's project administration; and all necessary sheds and facilities for the proper storage of tools, materials and equipment employed in the performance of the Work.

D. Toilet Facilities

The CONTRACTOR shall provide and maintain temporary toilet facilities for the duration of operations, which shall be maintained in a clean and sanitary condition acceptable to **OWNER** and in full compliance with applicable regulations of any public authority.

E. Telephones

The CONTRACTOR shall provide, maintain and pay for telephone services for the duration of the Work as required for the CONTRACTOR's operation.

F. Fence and Barricades

The CONTRACTOR shall provide such protective fences and barricades as he may deem necessary for public safety and to protect his storage areas and the Work in place. The location and appearance of all fences shall be subject to the approval of the **OWNER**.

G. CONTRACTOR Parking

The CONTRACTOR shall not park his equipment, nor allow his personnel to park, in any area except those specifically designated by the **OWNER**.

H. Temporary Living Quarters

Temporary living quarters shall not be allowed on the job site or on publicly owned properties. In addition, all Town of Quartzsite Zoning Codes for the area in question shall be strictly adhered to.

I. Removal of Temporary Construction

The CONTRACTOR shall remove temporary office facilities, toilets, storage sheds and other temporary construction from the site as soon as, in **OWNER's** opinion, the progress of Work permits. He shall recondition and restore those portions of the site occupied by the same to a condition equal to or better than it was prior to construction.

30.0 ACCESS TO Town Parcels

A. Unless otherwise mentioned herein, the CONTRACTOR must obtain written permission from the **OWNER** prior to gaining access to Town parcels for any purpose. Request for access to Town parcels will be reviewed on a case by case basis. The CONTRACTOR shall have access to Town parcels via public streets and/or private easements only. For the purposes of this paragraph, "private easement" means an agreement by and between the CONTRACTOR and a property owner, in writing, authorizing the CONTRACTOR to travel across the property owner's real property in order to have ingress or egress to washes, parcels or any portion thereof. Such agreements, if any, shall be filed with the Office of the Town Engineer before the CONTRACTOR may exercise the rights thereunder granted. Access to any wash, parcels, or portion thereof by any means not in compliance with the terms of this paragraph shall be deemed a trespass and a breach of the terms of the agreement.

B. CONTRACTOR may not use private property for screening operations and shall not use any private property for storage or staging without a written agreement by and between the CONTRACTOR and property OWNER authorizing the CONTRACTOR to use the said private property for storing and/or staging of materials and equipment. A copy of this written agreement must also be given to the ENGINEER. At no time shall the CONTRACTOR enter private property to construct sewer without written agreement from the property OWNER. **CONTRACTOR will not be allowed to pile dirt, concrete, asphalt or any other debris on these lots, unless the property OWNER has a proper grading permit posted on the lot.**

C. Violations of the provisions of subparagraph (a.) hereof, shall entitle the Town to deduct the sum of One Thousand Dollars ($1,000.00) from the monies due to CONTRACTOR as and for liquidated damages for each such violation. For the purposes of this paragraph, each entry by a vehicle upon land for which CONTRACTOR has not received permission to enter shall be deemed a separate violation of subparagraph (a.) hereof.

31.0 COORDINATION AND COOPERATION WITH UTILITY COMPANIES AND OTHER TRADES

A. Coordination/Interruption

The CONTRACTOR is responsible to coordinate work with all utility companies and other trades, on or affecting the job, for an efficient and effective execution of the complete project. The CONTRACTOR shall carefully examine all work that may conflict, and plan removal and/or installation details in advance of the construction to avoid any such conflict. Failure on the CONTRACTOR's part to coordinate with any and all utilities, public or private, shall preclude the Town's consideration for additional time or cost.

B. Permission Required

Utility mains and utility service to buildings shall not be cut off or otherwise interrupted without the CONTRACTOR obtaining permission from the **OWNER** in each and every instance.

C. Scheduling of Interruptions

Where utilities serve facilities or buildings in use, interruptions in service shall be scheduled during the hours when the facility is not in operation. Any overtime costs occasioned thereby shall be regarded as incidental to, and included within, the Contract Sum.

D. General Requirements

Prior to interrupting any utility service, the CONTRACTOR shall ascertain that he has the proper materials, together with adequate workmen and equipment, to complete the Work with a minimum of delay.

E. Electrical Service

The CONTRACTOR is responsible to coordinate with Unisource, Electric Division, to determine the extent of work to be performed by Unisource and by the CONTRACTOR to protect electric service throughout the course of construction.

32.0 AFFIDAVIT OF LAWFUL PRESENCE IN THE UNITED STATES

In accordance with A.R.S. §§ 1-501, 1-502 and as a condition of entering into this Contract, natural person(s) shall execute the affidavit attached hereto as **Exhibit 1** and present one of the identification documents contained therein (the "Identification Documents") to verify their lawful presence in the U.S. If applicable, failure to execute the affidavit and present one of the Identification Documents upon submittal of the Contract Documents shall be considered nonresponsive and shall result in rejection of the submitted response and automatic cancellation of this Contract.

33.0 REVIEW OF PROJECT SITE

The CONTRACTOR shall be responsible for reviewing the proposed project, and assuring a full understanding of the site and the surrounding area. No allowances will be made after bidding for conditions at the site, and the CONTRACTOR shall be responsible for furnishing all labor and materials necessary to carry out the provisions of the CONTRACT. All payment shall be based on using the CONTRACTORS listed cost for specific bid items. All items not specifically noted, but necessary to the PROJECT shall be considered incidental.

34.0 STAGING AREA

The CONTRACTOR shall be required to obtain permission to use the property adjacent to the project site as a staging area where screening and materials storage will occur. Written agreement(s) with the property owner(s) must be submitted prior to taking occupancy of the site. The CONTRACTOR shall be responsible for obtaining all necessary permits pertaining to the use of the site.

35.0 REMOVAL OF EXISTING IMPROVEMENTS

The CONTRACTOR will be responsible for the removal and disposal of all existing improvements within the construction limits necessary to construct the PROJECT. This will include any existing asphalt pavement, curbs, sidewalks, driveways and any buried items within the wash right-of-ways that would interfere with the installation of the PROJECT such as: buried concrete pieces, buried asphalt pieces, concrete cutoff walls, slope paving, debris, etc.

The CONTRACTOR shall dispose of all materials in accordance with local, state and federal regulations. The CONTRACTOR shall be responsible for all costs associated with the disposal of excess or disposed of materials, including all tipping fees at landfills, transportation costs, etc.

36.0 SIDEWALK, DRIVEWAYS, CONCRETE SLAB REMOVAL AND REPLACEMENT

The PROJECT may require the removal and replacement of existing sidewalks, driveways and/or concrete slabs for the installation of the water services and appurtenances. When a section of concrete is removed, it shall be sawcut at an existing joint where a full panel shall be removed and replaced. Sidewalk, driveways and concrete slabs shall be replaced in accordance with Town of Quartzsite standards for public works improvements and match pre-construction conditions. **No tunneling under sidewalks, driveways, curbs or other concrete slabs to install sewer lateral or water service pipe will be allowed. Tunneling shall be considered any method of construction that results in the curb, sidewalk and/or driveway being unsupported or freestanding and/or soil disturbance below the concrete structure's zone of influence. Punch through techniques shall not be considered unless a steel casing pipe is utilized and left in place. Directional drilling and jack and bore methods shall be acceptable forms of construction.**

37.0 VERTICAL CURB AND/OR CURB AND GUTTER REMOVAL AND REPLACEMENTS

The PROJECT may require the removal and replacement of existing vertical curb and/or curb and gutter for the installation of the sewers. When a section of vertical curb and/or curb and gutter is removed it shall be sawcut at an existing joint where a full section of vertical curb and/or curb and gutter shall be removed and replaced. Vertical curb and/or curb and gutter shall be replaced in accordance with Town of Quartzsite standards for public works improvements.

38.0 PAVEMENT REMOVAL AND REPLACEMENT

The PROJECT may require the removal and replacement of the roadway surface from edge to edge or gutter face to gutter face of the curb and gutter. The limits of pavement removal and replacement are indicated on the Contract Drawings. The street shall be resurfaced with a new asphaltic concrete as outlined in the sequence of construction contained herein.

39.0 EXCESS EXCAVATED MATERIAL

Excess excavated material (waste material) shall be disposed of at locations to be determined by the CONTRACTOR and approved by the Town. All waste area sites shall be graded to drain and compacted in accordance with local codes and ordinances.

40.0 POTHOLE EXISTING UTILITIES & IMPROVEMENTS

Prior to construction, the CONTRACTOR shall pothole all crossings of existing utilities prior to ordering valves, fittings, and connection materials to determine that the existing utility is not in conflict with the proposed improvements and allow for modifications if needed. If a conflict arises, the CONTRACTOR shall notify the ENGINEER and the ENGINEER will recommend a course of action.

41.0 WATER AND SEWER SEPARATION/PROTECTION

Identify potential areas where water and sewer separation/protection measures are likely to be encountered. It is the responsibility of the CONTRACTOR to assure that water and sewer lines are installed at the regulated separation or protection measures are utilized in accordance with the plans, Standard Number 5-060 of La Paz County's Construction Standards and Specifications, and ADEQ's requirements (R18.5-503 of the Arizona Administrative Code).

46.0 EMPLOYEE CONDUCT

Employees of CONTRACTORS and their SUBCONTRACTORS should give extra care to protect our citizens from offensive language or any form of inappropriate dress or behavior. Employees are expected to conduct themselves in a professional manor at all times and will be polite and considerate in any and all personal interactions with citizens. Be advised that

the OWNER'S Project Manager will swiftly investigate all complaints by citizens regarding any offensive conduct

The OWNER reserves the right without any assumption of liability to immediately demand removal of any person or persons from the job site that exhibits inappropriate behavior or dress unacceptable to the OWNER. Any person removed from the job site shall be prohibited from further involvement with the project in any way, shape or form.

47.0 NOISE, DUST AND OTHER IRRITANTS

Most reasonable people expect and will tolerate the temporary inconveniences of a public works construction project. To minimize noise impacts, the CONTRACTOR shall ensure all mufflers and other noise-attenuating devices are installed and functioning properly. Effective dust-control measures shall be used and all air and water hoses shall be leak-free to eliminate noise and property damage from unwanted runoff. All vehicles not essential to the work at hand must be parked out of the immediate neighborhood, preferably at approved staging areas off the street.

48.0 STREET RESTRICTION NOTICE

This CONTRACT includes temporary street closures or major impacts to normal traffic flows, the CONTRACTOR is required to submit a traffic control plan in accordance with Specification 2650 for the Town's approval at least two weeks prior to the proposed activity.

The final press release will be prepared and distributed to the local media by the Town Manager's Office. The draft press release shall be prepared using Microsoft Word and contain the following information:

- DATE for release to the public
- WHAT activity is going to occur
- WHO it will affect
- WHERE it will take place
- WHEN it will happen
- WHEN it will be over
- WHY it is necessary
- HOW citizens can avoid inconvenience
- WHO people can call for answers

The Public Works Department is here to assist the CONTRACTOR with any community relations problem or questions the CONTRACTOR may have regarding this project. Please contact Town of Quartzsite Public Works Department, by calling 928-927-4561.

49.0 LOCAL REPRESENTATIVE

In the event the CONTRACTOR demobilizes his forces prior to final acceptance, the CONTRACTOR shall immediately provide the Town with contact information for a local representative to provide emergency services until final acceptance is obtained and the provisions of the GUARANTEE are in effect. The local representative shall be capable of providing emergency services to repair or replace defective materials or workmanship arising from the CONTRACTOR'S work 24 hours per day, 7 days a week. The CONTRACTOR shall provide the OWNER with the following information regarding his selected representative:

- Name of Representative
- Local Address of Representative
- Local Phone Number of Representative
- Name of Contact

In the event of failure to comply with the above mentioned conditions, the OWNER may, at his own discretion, proceed to provide emergency services for any event arising from a defect in workmanship or materials. The cost of said services shall be the responsibility of the CONTRACTOR and may be deducted by the OWNER from any monies due the CONTRACTOR.

50.0 MODIFICATIONS TO TECHNICAL SPECIFICATIONS

FOR ALL STANDARD TECHNICAL SPECIFICATIONS:

REPLACE **"PART 4 – MEASUREMENT AND PAYMENT"** with the following:

PART 4 – MEASUREMENT AND PAYMENT

4.1 Measurement and Payment

See Section 01210.

SPECIFICATION 01320 – PROJECT MEETINGS, SCHEDULES, AND REPORTS

1.1.C – Schedules and Reports – The following shall be ADDED:

7. Quality Control Testing Plan and Reports.

8. Health and Safety Plan.

1.3.D.1.a – Construction Progress Reports – The following shall be ADDED:

(5) CONTRACTOR quality control testing update.

(6) Health and safety update.

1.3 – Schedules and Reports – The following shall be ADDED:

G. Quality Control Testing Plan and Reports

1. A Quality Control Testing Plan shall be developed by the CONTRACTOR and submitted to the ENGINEER no later than the Preconstruction Conference. The Plan will include the following items:

a. Qualifications of the proposed laboratory including laboratory accreditations and certifications for technicians proposed for the work.

b. Test Frequency Table (one table for each specification section requiring CONTRACTOR quality control) establishing the proposed number of tests. The Table shall include columns for:

(1) Material Tested

(2) Sampling and Testing Points

(3) Test Method

(4) Minimum Sampling Frequency

(5) Estimated Quantity of Materials

(6) Number of Tests Required

(7) The Table shall also include columns for number of tests complete and % of tests complete. These last two columns are for use in periodic reporting of QC testing to the ENGINEER.

2. The CONTRACTOR shall submit reports of Quality Control Testing to the ENGINEER at each Coordination Meeting. The report shall include all Quality Control test reports for testing completed during the prior week, and shall include updated Test Summary Tables. The Tables shall include updated values for cummulative number of tests completed and % of required number of tests completed. One Table shall be submitted for each specification item requiring CONTRACTOR quality control testing, and it shall be updated through the end of the prior week.

SPECIFICATION 01325 – CONSTRUCTION PHOTOGRAPHS

Section 3.1 Route Photographs shall be retitled "Project Site".

3.1.A - Project Site – shall be REVISED as follows:

A. The Contractor shall be responsible for photographs of the entire project site to show the existing and general condition of the site prior to construction. Each photograph must have a time stamp with date. In addition, the Contractor shall take photographs each week and as follows:

1. Site clearing
2. Demolitions
3. Excavations
4. Installation
5. Final completion

3.1.C – shall be REVISED as follows:

The principal reason for obtaining photographs is so that items such as landscaping, privacy walls, wash locations, etc may be clearly shown and recorded. This will in some degree preclude the possibility of post construction litigation between Contractor, property owners adjacent to the work, and the **OWNER**.

SPECIFICATION 01580 – PROJECT IDENTIFICATION AND SIGNS

3.1.A.1 – Project and Contractor Identification Sign – Shall be REPLACED with the following:

1. CONTRACTOR shall obtain Town approval on location of CONTRACTOR Identification Sign. Sign should be installed in appropriate location so as not to obstruct traffic, pedestrians, or construction operations.

SPECIFICATION 01780 – CONTRACT CLOSEOUT

1.1.C.2. – Related Work Specified Elsewhere – Section shall be REPLACED with the following:

2. Submittals ..... Section 01330
Field Tests of Equipment ..... Section 01660
Field Testing ..... Section 16950

1.2.A – Preliminary Procedures – The following shall be ADDED:

10. Submit consent of Guarantee from CONTRACTOR.

11. Submit Start-up and Final Testing logs to Town.

SPECIFICATION 02200 – EARTHWORK

1.2.B - Frequency of Testing – Section shall be REPLACED with the following:

1.2.B – Quality Control Testing

The CONTRACTOR is required to provide a reasonable level of quality control testing to ensure that materials incorporated into the work and soils compaction methods achieve a product that complies with the specifications. The CONTRACTOR shall retain the services of a qualified laboratory to provide quality control testing. The following items describe the minimum number of quality control tests required by the CONTRACTOR'S Laboratory.

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.

a. One test for each different class or type of material shall be performed prior to any earthwork operations.

b. Additional tests shall be performed when previous tests are suspect, or if changes in the material are detected.

2. Density of Soil In-Place by the Sand Cone or by Nuclear Methods, ASTM D1556 or D2922.

a. Perform a minimum of one test per lift per 5,000 square yards per each type of material.

b. Perform additional tests as required to verify proper compaction has been achieved.

1.2.C - Frequency of Quality Assurance Testing – Section shall be REPLACED with the following:

The ENGINEER at the discretion of the **OWNER** may perform quality assurance testing for compaction. Test frequencies will be established at the discretion of the ENGINEER and **OWNER**. In the event of a failure of a quality assurance test, the non complying materials will be removed and replaced or reworked by the CONTRACTOR. Quality Control tests shall be performed and verify an acceptable condition prior to quality assurance re-tests by the ENGINEER.

Add the following section:

1.2.D - Testing Tolerances

1. Relative Percent Compaction

Not less than as specified on plans or in these sepcifications.

2. In-Place Moisture Content

As required to achieve minimum relative compaction.

3. Soft or Yielding Surfaces

Regardless of the percent compaction obtained by test, areas which are soft and yield under the load of construction equipment are to be removed and replaced at no additional cost.

1.3.A – Materials Test Reports – The following shall be ADDED:

Compaction test reports shall be submitted to the ENGINEER within two (2) business days of completion of a given test.

SPECIFICATION 02254 – SHEETING AND SHORED EXCAVATIONS

3.5 – Trench Excavation – ADD the following section:

C. Sheet piling used for shoring shall extend at least 2 feet below the bottom of the trench. After completion of the pipe, it may be removed by cutting at least 12 inches above the top of the pipe. No vibratory methods for pile removal will be accepted, and piling lower than 12 inches above the top of the pipe shall be left in place.

4.1 – Measurement – This section will be replaced with the following:

4.1 Measurement and Payment

See Section 01210.

4.2 – Payment – Delete in its entirety.

SPECIFICATION 02300 – TRENCH EXCAVATION AND BACKFILL

1.1.B. – Related Work Specified Elsewhere – Section shall be REPLACED with the following:

1.1.B. – Related Work Specified Elsewhere

Earthwork.....Section 02200

Water Piping Systems.....Section 02550

1.2.B - Frequency of Testing – Section shall be REPLACED with the following:

1.2.B – Quality Control Testing

The CONTRACTOR is required to provide a reasonable level of quality control testing to ensure that materials incorporated into the work and soils compaction methods achieve a product that complies with the specification. In addition, the CONTRACTOR

shall retain the services of a qualified laboratory to provide quality control testing. The following items describe the minimum number of quality control tests required by the CONTRACTOR'S laboratory.

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.

a. One test for each different class or type of material shall be performed prior to beginning construction.

b. Additional tests shall be performed when previous tests are suspect or if changes in the material are detected as determined by the ENGINEER.

2. Density of In-Place Soil by the Sand Cone or by Nuclear Methods, ASTM D1556 or D2922.

a. Perform a minimum of one test per foot of depth per 650 linear feet of trench for Select Backfill. The tests shall be evenly distributed throughout the depth of Select Backfill materials in the trench. If insufficient test results are presented representing a given depth (i.e. inadequate number of tests at lower depths in the trench) the CONTRACTOR shall pothole the completed backfill to acquire additional test results such that specified frequencies and depth distributions are achieved.

b. Perform a minimum of one test per 650 linear feet of trench for Bedding Sand

c. Perform additional tests as required to verify proper compaction has been achieved.

3. Sieve Analysis of Aggregate, ASTM C136

a. One test per 1,000 cy of Bedding Sand Material incorporated into the work.

b. One test per 5,000 cy of Select Backfill Material incorporated into the work.

4. Plasticity Index of Soils, ASTMD 4318

a. One test per 1000 cy of Bedding Sand material incorporated into the work.

b. One test per 5000 cy of Select Backfill material incorporated into the work.

5. Testing Tolerances

a. Percent Relative Compaction

Not less than as specified on plans or in these specifications.

b. In-Place Moisture Content

± 2% of optimum moisture, and as required to achieve maximum relative density.

c. Soft or Yielding Surfaces

Regardless of percent relative compaction obtained by test, areas, which are soft and yield under the load of construction equipment, are to be removed and replaced at no additional cost.

1.2.C – Testing Tolerances – Section shall be REPLACED with the following**:**

1.2.C - Frequency of Quality Assurance Testing

1. The ENGINEER at the discretion of the **OWNER** may perform quality assurance testing for compaction, gradation and PI of bedding sand and for compaction, gradation and PI of select backfill. Test frequencies will be established at the discretion of the ENGINEER and **OWNER**. In the event of a failure of a quality assurance test, the non complying materials shall be removed and replaced or reworked by the CONTRACTOR. Quality Control tests shall then be performed and verify an acceptable condition prior to quality assurance re-tests by the ENGINEER.

1.3.A – Submittals – Material Test Reports - Add the following:

3. Quality Control

Compaction test reports shall be submitted to the ENGINEER within two (2) business days of completion of the test.

2.1.B – Bedding – ADD before the first sentence:

Bedding for all water pipelines shall be neutral sand. All cast-in-place concrete foundations shall have aggregate base.

The following specifications, as a minimum, shall be met for neutral sand:

Sand Equivalent 30 Minimum
PH 6.5 – 8.5
Resistivity 2,000 – 50,000 ohm-cm
Sulfate (optional) 1500 PPM or less

3.4.E.2 – Lift Thickness – Section shall DELETED.

3.4.F.3 – Water Jetting – DELETE section in its entirety.

3.4.F.4 – Compaction Densities – The following shall be ADDED:

PERCENT RELATIVE COMPACTION MINIMUM DENSITY REQUIRED				
Backfill Type	**Location**	**From Subgrade Surface To 2' Below Surface**	**From 2' Below Surface To 1' Above Top of Pipe**	**From 1' Above Top of Pipe To Bottom of Trench**
IV	Outside of Right-of-Way and not below curb, gutter sidewalk or any other structures.	90% in all cases		

SPECIFICATION 02321 – EXCAVATION, FILLING AND BACKFILLING FOR STRUCTURES

1 – GENERAL – The following shall be ADDED:

1.2 Reference Standards and Specifications

A. American Society for Testing and Materials (ASTM)

ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

ASTM D4253 - Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

ASTM D4254 - Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

ASTM C136 - Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

ASTM D1556 - Density of Soil in Place by the Sand-Cone Method.

ASTM D2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D3017 - Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

B. State of Arizona Standards (ARIZ)

ARIZ 227 - Rock Correction Procedure for Maximum Density Determination.

C. Arizona State Regulations

Arizona Department of Environmental Quality, Engineering Bulletin No. 11, minimum requirements for design and submission of plans and specifications of sewage works.

D. Occupational Safety and Health Administration (OSHA)

Part 1926 - Safety and Health Regulations for Construction.

1.2 – Quality Assurance – Section shall be REPLACED with the following Section 1.3:

1.3 – Quality Assurance

A. Frequency of Quality Assurance Testing

The ENGINEER at the discretion of the **OWNER** may perform quality assurance testing for compaction, gradation and PI of backfill. Test frequencies will be established at the discretion of the ENGINEER and **OWNER**. In the event of a failure of a quality assurance test, the non complying materials shall be over-excavated to the depth of the failure and replaced and/or reworked by the CONTRACTOR. Quality Control tests shall then be performed and verify an acceptable condition prior to quality assurance re-tests by the ENGINEER.

1.3 – Submittals – shall be REVISED to read: **1.4 Submittals and Quality Control**

The following shall be ADDED:

C. Quality Control Testing

The CONTRACTOR is required to provide a reasonable level of quality control testing to ensure that materials incorporated into the work and soils compaction methods achieve a product that complies with the specification. In addition, the CONTRACTOR shall retain the services of a qualified laboratory to provide quality control testing. The following items describe the minimum number of quality control tests required by the CONTRACTORS laboratory.

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.

a. One test for each different class or type of material shall be performed prior to beginning construction.

b. Additional tests shall be performed when previous tests are suspect or if changes in the material are detected as determined by the ENGINEER.

2. Density of In-Place Soil by the Sand Cone or by Nuclear Methods, ASTM D1556 or D2922.

a. Perform a minimum of one test per 5 feet of depth per manhole or other structure requiring backfill or select backfill. The tests shall be evenly distributed throughout the depth of Select Backfill materials in the excavation. If insufficient test results are presented representing a given depth (i.e. inadequate number of tests at lower depths in the excavation) the CONTRACTOR shall pothole the completed backfill to acquire additional test results such that specified frequencies and depth distributions are achieved.

b. Perform additional tests as required to verify proper compaction has been achieved.

3. Sieve Analysis of Aggregate, ASTM C136

One test per 5,000 cy of Select Backfill Material incorporated into the work.

4. Plasticity Index of Soils, ASTMD 4318

One test per 5000 cy of Select Backfill material incorporated into the work.

D. Materials Test Reports – Quality Control

1. The CONTRACTOR shall submit source qualification test results showing compliance with the materials specifications prior to beginning that aspect of work.

2. Report on bedding and backfill materials compliance tests as required.

3. Compaction test reports shall be submitted to the ENGINEER within two (2) business days of completion of the test.

E. Spoil Disposal Area

Provide location and written approval for area to dispose of spoil from operation.

2.1.A – Earth Backfill – The word "granular" shall be REVISED to read "select".

3.2.B – Earth Backfill – Shall be REVISED to read: **Select Backfill**

3.3 – Field Quality Assurance – Section shall be DELETED.

SPECIFICATION 02535 – PIPE INSTALLATION

1.1.A – Description of Work – Section shall be REPLACED with the following:

This Section includes handling and installation of pipe, fittings, specials, and appurtenances as indicated or specified. The CONTRACTOR shall install all pipe, fittings, manifolds, and other specials, bolts, nuts, gaskets, and join all piping and appurtenances, as indicated and required, to provide a complete and workable installation.

1.1.B – Related Work Specified Elsewhere - Section shall be REPLACED with the following:

Earthwork	Section 02200
Trench Excavation and Backfill	Section 02300
Water Piping Systems	Section 02550
Cement Mortar Lined and Coated Steel Pipe and Specials	Section 02651
General Piping Systems and Appurtenances	Section 15000

PART 2 – MATERIALS - Section shall be REPLACED with the following:

PART 2 – MATERIALS - NOT USED

3.1.A – Installation - Section shall be REPLACED with the following:

A. Verify all preliminary work has been completed prior to any pipeline construction.

3.1– Installation – The following section shall be ADDED:

I. No pipes or appurtenances shall be installed when the interior or exterior surfaces show cracks or other defects that maybe harmful as determined by the ENGINEER. Damaged surfaces shall be repaired to the satisfaction of the ENGINEER or a new undamaged pipe or appurtenance shall be provided.

3.4 Field Testing: - Section shall be deleted in its entirety.

SPECIFICATION 02550 – WATER PIPING SYSTEMS

2.0.1 – PVC Pressure Pipe, 4 Inches Through 12 Inches – Add the following to the end of the first sentence:

"unless shown otherwise in the drawings."

2.0.2 – PVC Pressure Pipe, 14 Inches Through 36 Inches – Add the following to the end of the first sentence:

"unless shown otherwise in the drawings."

2.0.3 – Ductile Iron Pipe – Add the following paragraph:

All bedding for ductile iron pipe shall be clean sand. A double layer of polyethylene wrap meeting the requirements of AWWA C105 shall be installed around each pipe.

2.2.2 – Butterfly Valves - Add the following paragraph:

12-inch Butterfly valves shall be AWWA C504, minimum 250 psig working pressure, NRS, 2 inch square operating nut, left hand opening, counter clockwise, EPDM seat, stainless steel valve shaft, ductile iron disk with stainless steel disk edge. Install with valve shaft in horizontal position. Factory applied minimum 6 mil dry film thickness epoxy coating on all interior and exterior ferrous surfaces. Epoxy coating per AWWA C550. Flanges shall be Class 125 drill pattern and size.

Add the following Section:

2.11 - Line Stops

A. Line stops shall be used where indicated on the phasing plans. Line stops shall be rated for a minimum of 200 psi.

B. Line stops have thrust blocks to prevent line movement.

C. The line stops shall be installed by company with a minimum of 5 years of experience. Line stops shall be installed by Koppl Pipeline Services, Inc., or approved equal.

SPECIFICATION 03100 – CONCRETE FORMWORK

1.1.B – Related Work Specified Elsewhere – DELETE the following:

Concrete Curb, Gutter, Sidewalk, and Driveways.....Section 03310

1.3 – Submittals – ADD the following section:

A. The CONTRACTOR shall, in accordance with the requirements in Section 01330 "Submittals", submit detailed plans of the falsework proposed to be used. Such plans shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the falsework, and typical soil conditions. All shoring, bracing and falsework shall be designed and certified by an Arizona State registered Civil Engineer or responsible person as required by the Arizona Administrative Code.

2.1 – Materials for Facing - Section shall be REPLACED with the following:

2.1 FORM AND FALSEWORK MATERIALS

A. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Lumber shall be Douglas Fir or Southern Pine, construction grade, in conformance with U.S. Product Standard PS20.

2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine plywood manufactured especially for concrete framework and shall conform to the requirements of PS 1 for Concrete Forms, Class I, and shall be edge sealed.

3. Form materials shall be metal, wood, plywood, or other approved material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade indicated. Metal forms shall be an approved type that will accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO Exterior Grade.

4. Form liners for textured concrete finish shall be extruded ABS plastic as indicated on the Drawings and as manufactured by Fitzgerald, Symons, Greenstreak, or equal.

B. Unless otherwise shown, exterior corners in concrete members shall be provided with 3/4-inch chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise shown.

C. Forms and falsework to support floor slabs shall be designed by the CONTRACTOR for a minimum dead load plus a live load of 50 psf, plus any and all such additional loadings as may occur.

3.4 – REUSE OF FORMS – ADD the following section:

3.4 REUSE OF FORMS

A. Forms may be reused only if in good condition and only if acceptable to the ENGINEER. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on all exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of hydraulic/water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the ENGINEER.

SPECIFICATION 03300 – CONCRETE

1.2.B.2 – Acceptance Testing of Concrete During Construction – REVISE "two" to "three".

1.3– ADD the following:

G. Certified Delivery Tickets per Section 2.7.F.5.c.

2.1.A.1 - Materials – The section shall be REVISED as follows:

1. Portland cement Type V. Conform to ASTM C150. A single brand of cement shall be used throughout the project.

2.1.C.2 – The section shall be REVISED as follows:

2. The maximum slump of concrete shall be 3-inches and the minimum slump of concrete shall be 2-inches, as tested in accordance with ASTM C143.

2.1.C– ADD the following section:

6. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at the 28-day drying 0.042 percent.

The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage by more than 25 percent.

If the required shrinkage limitation is not met during construction, the CONTRACTOR shall be required to take any or all of the following actions, at no additional cost to the **OWNER**, for securing the specified shrinkage requirements. These actions may include changing the source of aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.

a. Three drying shrinkage specimens shall be taken from the first pour of concrete. Each specimen shall be 4-inch by 4-inch by 11-inch prisms with an effective gauge length of 10-inch, fabricated, cured, dried and measured in accordance with ASTM C 157 modified as follows: Specimens shall be removed from molds at an age of 23 ±1 hours after trial batching, shall be placed immediately in water at 70 ºF ±3 degrees F for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at 73 ºF ±3 ºF. Measurement to determine expansion expressed as a percentage of original length shall be made at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at 73 ºF ±3 ºF and 50 percent ±4 percent relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying <u>after</u> 7 days of moist curing.

b. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001 inch at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004 inch, the results obtained from that specimen shall be disregarded. Results of the shrinkage test shall be reported to the nearest 0.001 percent of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. .

2.1.D.2.a.(1) – REVISE 3rd sentence to read:

"Each point on the curve shall represent the average of at least three cylinders tested at 7 days and at 28 days.

2.1.D.2.a.(3)(d)– ADD the following:

4. Shrinkage Tests.

2.1.D– ADD the following:

4. No concrete shall be placed until the mix is approved by the ENGINEER.

2.1.F.5.e– ADD the following:

(8) Each ticket shall verify that the cement, sand and aggregate in the load are from the same source used in the mix design. Each ticket shall show the public weighmaster's signature, and the total quantities, by weight of cement, sand, each class of aggregate, admixtures, and the amounts of water in the aggregate, the amount added at the plant, and the maximum amount that may be added at the site for the specific design mix.

2.2.B.1 – The following section shall be REPLACED as follows:

1. Required for setting handrail posts, for setting equipment recommended by the manufacturer to be set with non-shrinking grout, for repairing all holes and defects in concrete members which are not water bearing and not in contact with soil or other fill material.

2.2.B.2 – ADD the following sentence at the end.

The grout will have a minimum 28-day compressive strength of 5,000 psi.

2.2 – ADD the following sections:

D. Topping Grout And Concrete Fill

1. Topping grout and concrete fill shall contain a minimum of 564 pound of cement per cubic yard with a maximum water cement ratio of 0.45.

2. The minimum 28-day compressive strength of topping grout shall be 4,000 psi.

3. The slump for topping grout and concrete fill shall be adjusted to match placement and finishing conditions but shall not exceed 4-inches.

E. Epoxy Grout

1. Epoxy grout shall be a pourable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged.

2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.

3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75 ºF.

4. The epoxy grout shall develop a compressive strength of 5000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0 percent) and a maximum 4.0 percent expansion when tested in accordance with ASTM C 827.

5. The epoxy grout shall exhibit a minimum effective bearing area of 95 percent. This shall be determined by a test consisting of filling a 2-inch diameter by 4-inch high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.

6. The peak exotherm of a 2-inch diameter by 4-inch high cylinder shall not exceed 95 degrees F when tested with 75 ºF material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30 x 10^{-6} inches/inch/ºF when tested according to ASTM C 531 or ASTM D 696.

7. Application. Epoxy grout shall be used to embed all anchor bolts and reinforcing steel required to be set in grout, and for all other applications required in the CONTRACT DOCUMENTS.

2.5.A. – ADD the following sentence to the section:

The curing compound shall contain a fugitive dye so that areas of application will be readily distinguishable. Curing compound shall be non-toxic to potable water.

3.1.B – ADD the following section:

5. Concrete shall not be placed without prior ENGINEER's approval of the placement of all items to be embedded.

3.2.A.2.b – ADD the following sentence to the section.

Chutes longer than 50 feet shall not be used.

3.4.A.4 – The section shall be REPLACED with the following:

4. Using polyethylene sheets applied in full contact with surfaces for a minimum of 14 days. The sheets shall be left in place during the 14-day curing period and shall not be removed until after concrete for adjacent work has been placed. Should the sheets become torn or otherwise ineffective, the CONTRACTOR shall replace damaged sections. During the first 3 days of the curing period, no traffic of any nature and no depositing, temporary or otherwise, of any materials shall be permitted on the sheets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 5/8-inch minimum thickness, laid over the sheets.

3.8.B – Equipment Bases – The section shall be deleted in its entirety and REPLACED with:

B. Equipment Bases

1. For base plates, the original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a one-inch thickness of grout or a thickness as shown in the CONTRACT DOCUMENTS. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with the non-shrink type grout. The mixture shall be tamped or rodded solidly into the space between the plate and the original concrete. A backing board or stoop shall be provided at the backside of the space against which the grout can be placed.

2. The minimum thickness of grout topping shall be one-inch. Where the finished surface of concrete fill is to form an intersecting angle of less than 45 degrees

with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3½-inches wide by 1½-inches deep.

3. The base slab shall be thoroughly cleaned and wetted prior to placing topping and fill. No topping concrete shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat Type II cement grout shall be broomed into the surface of the slab just before topping or fill placement. The topping and fill shall be brought to established grade, compacted by rolling or tamping, and floated. Grouted fill for tank and basin bottom shall be screened by the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade.

4. The surfaces shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping and fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement or mixture of dry cement and sand shall be applied to the surface.

3.8 – Miscellaneous Concrete Items – ADD the following:

C. Topping Grout

1. All mechanical, electrical, and finish work shall be completed prior to placement of topping or concrete fill. The base slab shall be given a roughened textured surface by sandblasting or hydroblasting exposing the aggregates to ensure bonding to the base slab.

2. The minimum thickness of grout topping and concrete fill shall be one inch. Where the finished surface of concrete fill is to form an intersecting angle of less than 45º with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2-inches wide by 1-1/2-inches deep.

3. The base slab shall be thoroughly cleaned and wetted prior to placing topping and fill. No topping concrete shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat Type II cement grout shall be broomed into the surface of the slab just before topping of fill placement. The topping and fill shall be compacted by rolling or tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade.

4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.

5. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping and fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement or mixture of dry cement and sand shall be applied to the surface.

**** END OF SECTION 00800 ****

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SECTION 01100

SUMMARY OF WORK

PART 1 - GENERAL

1.1 Summary

A. This Section summarizes the Work covered in detail in the complete Contract Documents.

B. **Owner:** Town of Quartzsite is contracting for Work described in the Contract Documents.

Contract Identification: S Scott Lane Sewer Line Extension Improvements

Work Site Location:
Town of Quartzsite, Arizona

1.2 Project Description

A. Description of Contract

This project consists of the construction of the sewerline extension along S. Scott Lane and includes, but is not limited to, furnishing and installation of the 8-inch sewerline, manholes, trench backfill, and pavement repair.

B. Work Covered by Contract Documents

Includes all construction activities associated with the construction of pipeline, manholes, and laying asphalt pavement.

C. Drawings and Specifications

All work shall be performed in accordance with the drawings, special provisions, supplemental technical specifications, and Standard Technical Specifications for Public Works Construction as furnished by Town of Quartzsite.

1.3 CONTRACTOR'S USE OF PREMISES

A. Limited Use

1. Contractor shall restrict the construction operations on private property to the absolute minimum disturbance required to perform the work. The Town has obtained easements to allow for the construction of the service laterals on private property. Unauthorized use of washes, Town Parcels, and Private Property may result in a fine.

2. Conduct operations so as to ensure the least inconvenience to Owner and the general public.

1.4 Work Sequence

A. General: The general sequence of construction will be determined by the Contractor and submitted to the Town for approval.

B. Continuous Service of Existing Facilities: Exercise caution and schedule operations to ensure that functioning of present facilities will not be disrupted.

1.5 Copies of Documents

A. Furnished Copies: After execution of Agreement, Contractor will be furnished at no cost, a maximum of 6 sets of Contract Documents consisting of full-size Contract Drawings including revised Drawings, and the Contract Documents, in addition to those used in execution of the Agreement.

1.6 List of Drawings

A. Contract Drawings

1. Each sheet of the Contract Drawings will bear one of the following general titles:

S Scott Lane Sewer Line Extension

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION – Not Applicable.

PART 4 – MEASUREMENT & PAYMENT - Not Applicable.

**** END OF SECTION 01110 ****

SECTION 01200

MOBILIZATION/DEMOBILIZATION

PART 1 - GENERAL

1.1 Description

A. Description of Work

The work to be performed in accordance with this section includes the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of offices, buildings and other facilities necessary for work on the project; for premiums on bonds and insurance for the project and for all other work and operations which must be performed or costsincurred before beginning work on the various contract items.

Demobilization at the end of the job includes removal of tools, materials, equipment and facilities used by the **CONTRACTOR** during construction of the project. Also included is final cleanup to leave the site with a neat, clean appearance.

PART 2 - MATERIALS

2.1 General

Materials shall consist of equipment, buildings, and tools necessary to move to the project site to perform work. Material for bid items shall not be included in Mobilization.

PART 3 - EXECUTION

3.1 General

Setting up of offices, and the use of private property for storage or work area shall be executed in a legal manner in accordance with local and state codes and ordinances.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No measurement will be made.

4.2 Payment

Payment for mobilization will be made as follows:

A. When 5% of the total original contract amount is earned from other Bid Items, 50% of the amount bid for Mobilization, or 5% of the total original contract amount, whichever is the least, will be paid.

B. When 10% of the total original contract amount is earned from other Bid Items, 100% of the amount bid for Mobilization, or 10% of the total original contract amount, whichever is the least, will be paid.

C. Upon completion of all work on the project, payment of any amount bid for Mobilization in excess of 10% of the total original contract amount will be paid. Demobilization shall be considered incidental to the Mobilization Bid Item.

See Section 00310 Bid Schedule for Bid Items.

END OF SECTION

SECTION 01210

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 Description

The outline of measurement and payment in this section is intended to provide a general guideline to the CONTRACTOR in preparing bids and submitting pay requests. Listing of work included in each bid item is not intended to include all work, but is to provide general guidance to the CONTRACTOR for allocating costs. All work will be paid for on a unit price basis with payment made for the quantity of each item completed.

All materials required for construction shall be furnished by the CONTRACTOR unless specifically stated. Items not specifically measured and paid for shall be considered as subsidiary items required to complete the installation in accordance with the intent of the contract documents. The CONTRACTOR shall include in the unit price bid items, all costs associated with subsidiary items not being measured for payment.

1.2 Authority

Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section governs.

Take all measurements and compute quantities. The ENGINEER will verify measurements and quantities.

1.3 Unit Quantities

Quantities indicated in the Bid Form are for bidding and contract purpose only. Quantities and measurements supplied or placed in the Work and verified by the ENGINEER shall determine payment.

If the actual Work requires more or fewer quantities than indicated, provide the required quantities at the unit prices contracted.

PART 2 – UNITS AND METHODS OF MEASUREMENT

2.1 General

All items that are included in the bid for measurement and payment are included herein. All other items of work shall be considered subsidiary to construction and will not be measured for payment.

2.2 Units and Methods of Measurement Base Bid

2.2.1 Mobilization, Bonds, and Insurance

The Contract Lump Sum Price for this item shall constitute full compensation for furnishing all materials, labor, equipment and tools for all required bonds, insurance, mobilization of staff and equipment, and any other costs associated with complying with the contract administrative requirements and commencing work at the project site. This item also includes all work and materials necessary to complete the work as described in the plans and specifications. **Payment for this item shall be lump sum and shall not be requested until at least thirty days from the notice to proceed has elapsed.**

Payment for this item shall be made in accordance with Table A.

TABLE A

Payment for Mobilization on First Partial Payment	Not to exceed 2.5% of the Lump Sum Base Bid
Subsequent payments for Mobilization	Not to exceed 2.5% of the Lump Sum Base Bid
Payment For Mobilization on Final Partial Payment	Any remaining Mobilization in excess of 5% of the Lump Sum Base Bid

2.2.2 Traffic Control

The Contract Lump Sum Price for this item shall constitute full compensation for furnishing all materials, labor, equipment and tools for the development and implementation of the Traffic Control plan(s) in accordance with the Specifications and acceptable to the Town. This shall include all signage, temporary striping, flaggers, barricades, lighting, and related items necessary to ensure the safety of workers and convenience of local residents throughout the project. This item also includes all work and materials necessary to complete the work

as described in the Plans and Specifications. Payment of this item shall be lump sum.

2.2.3 8-Inch PVC (SDR-35) Sewer Line

The quantity of "8-Inch PVC (SDR-35) Sewer Line" measured for payment shall be per linear foot.

The price per linear foot in place shall be full compensation for furnishing all materials, labor, equipment and tools to install complete and in place as shown and specified in the CONTRACT DOCUMENTS. Work shall include but not be limited to; pavement removal, potholing, excavation, plugging ends of pipe with concrete, pipe bedding, PVC pipe, fittings and appurtenances, sewer bypass if necessary, connections to existing sewer main and vault, testing, cleaning, warning tape, backfill, compaction, offsite disposal of excess material, temporary resurfacing/ steel plating, inspection, cleanup, protection of all utilities, abandonment/removal of all conflicting existing utilities in accordance with Section 02050, and any/ all other work associated with the 8-inch sewer system and as shown on the Plans and as directed by the ENGINEER.

Sewer bypass shall include all labor, tools, equipment, and materials to "bypass" or "high-line" to maintain flows during the construction of any existing sewer facility. All scheduled shut-downs shall be no more than 2 (two) hours in duration and shall be scheduled during off-peak sewage flows as approved by the Engineer. The Contractor shall conform to all Federal, State and Local regulations during the performance of sewer shut-downs, bypass, high-lines, and operations related to maintaining flows in the existing sewer system. Appropriately sized standby or backup pump(s)/system shall be available onsite for all bypass and high-line related work. In case of failure of primary pumping system, Contractor shall switch over to the backup system to maintain sewer flows. Contractor shall take precaution and use an appropriate factor of safety to size the required pump(s) correctly. The method used shall be the responsibility of Contractor, but shall not inconvenience property owners or the public in general.

2.2.4 48-Inch Diameter Manhole

The quantity of "48-Inch Diameter Manhole" measured for payment shall be per each manhole installed.

Contract Unit Price Per Each bid for this item shall constitute full compensation for furnishing all materials, labor, equipment and tools

for the construction of a standard eccentric cone 48" diameter manhole 8' deep (from top of ring to the flowline out) along with all excavation, bypass pumping if necessary, bedding, compaction, shoring, sheeting, dewatering, concrete, masonry, rings, covers, testing and as-built surveying. This item also includes any work and materials necessary to complete the work in accordance with the Plans and Specifications. Payment of this item shall be per each installed and successfully tested manhole. Payment will be issued when the manhole to manhole service/lateral connections are complete.

2.2.5 Sewer Clean Out

The quantity of "Sewer Clean Out" measured for payment shall be per each clean out installed.

The Contract Price Per Each bid for this item shall constitute full compensation for furnishing all materials, labor, equipment and tools for the complete installation of a 8" PVC cleanout. This item includes all excavation, backfill, compaction, fittings and concrete pad. This item also includes all work and materials necessary to complete the work in accordance with the Plans and Specifications. Payment of this item shall be per each.

2.2.6 Force Account

A force account has been established and is indicated in the Bid Form as a lump sum cost item. The value indicated in the Bid Form is to be included in the total bid price for the work. The CONTRACTOR shall not consider any monies indicated in the force account item as a part of his payment for the Work or profit or otherwise without written notification by the OWNER. This item can be used when the CONTRACTOR and the ENGINEER cannot agree on a cost for a requested addition to the project. The ENGINEER can direct the CONTRACTOR to perform work that is similar in nature to the Contract Work and the CONTRACTOR will be compensated based on the hours for labor & equipment actually used to complete the work, plus any materials needed. The equipment will be compensated on an hourly rate published in the latest "Rental Rate Blue Book" for construction equipment. Labor will be paid on the actual paid wage of the workers used and calculated as shown in the ADOT Standard Specification Section 109. A 15% mark-up for overhead & profit will be added to the equipment & material only, as well as the labor burdens as described in the ADOT Standard Specification Section for Force Account Work.

PART 3 – MEASUREMENT OF QUANTITIES

3.1 Measurement Devices

A. Weigh Scales: Inspected, tested and certified by the applicable State Weights and Measures Department within the past year.

B. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

C. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.

3.2 Measurement by Weight

Measured by tons as described above.

3.3 Measurement by Volume

Measured by cubic dimension using mean length, width and height or thickness.

3.4 Measurement by Area

Measured by square dimension using mean length and width or radius.

3.5 Linear Measurement

Measured by linear dimension, at the item centerline or meanchord.

3.6 Stipulated Sum/Price Measurement

Items measured by lump sum or each, as appropriate, as a completed item or unit of the work.

PART 4 – PAYMENT

4.1 Payment Includes

Full compensation for all required labor, products, tools, equipment, transportation, services and incidentals; erection, application or installation of an item of the Work; taxes, overhead and profit.

4.2 Final Payment

Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the ENGINEER multiplied by the unit sum/price for work which is incorporated in or made necessary by the Work.

PART 5 – DEFECT ASSESSMENT

5.1 Replace the Work, or portions of the work, not conforming to specified requirements.

5.2 If, in the opinion of the ENGINEER, it is not practical to remove and replace the Work, the ENGINEER will direct one of the following remedies:

A. The defective Work may remain, but the unit price will be adjusted to a new price at the discretion of the ENGINEER.

B. The defective Work will be partially repaired to the instructions of the ENGINEER, and the unit price will be adjusted to a new price at the discretion of the ENGINEER.

5.3 The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.

5.4 The authority of the ENGINEER to assess the defect and identity payment adjustment is final.

PART 6 – NON-PAYMENT FOR REJECTED PRODUCTS

6.1 Payment will not be made for any of the following:

A. Products wasted or disposed of in a manner that is not acceptable.

B. Products determined as unacceptable before or after placement.

C. Products not completely unloaded from the transportation vehicle.

D. Products placed beyond the lines and levels of the required Work.

E. Products remaining on hand after completion of the Work.

F. Loading, hauling and disposing of rejected products.

PART 7 - PRODUCTS – Not Used

PART 8 - EXECUTION – Not Used

****END OF SECTION 01210****

SECTION 01300

FORCE ACCOUNT

PART 1 - GENERAL

1.1 Description of Work

The work to be performed in accordance with this section includes additional work that is outside the general scope of the proposed project. The work to be performed shall be specifically requested in writing by the **OWNER** or the **ENGINEER**. As the project is completed, it is anticipated that the **OWNER** may request additional work to be performed that currently is not a part of this Contract and it is the intent that the requested work shall be performed in accordance with this section.

PART 2 - MATERIALS

2.1 General

Any materials utilized under this Section shall conform specifically with the appropriate Materials Section of these Specifications unless the **OWNER** specifically requests in writing a deviation from the Specifications. If the materials are not covered by an appropriate Specification of this document, then the **OWNER** will provide a written specification for the materials requested.

PART 3 - EXECUTION

3.1 Workmanship

Furnish all materials, equipment and labor required to complete the work. All workmanship shall meet or exceed the appropriate Specifications included in this document or any supplemental Specifications that may be provided. Perform work in accordance with the contract Plans or in accordance with any supplemental plans that may be provided by the **OWNER**.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

The method of measurement shall be in accordance with the appropriate specification or as included in specific written instructions from the **OWNER** or

the **ENGINEER**.

4.2 Payment

Payment for work performed under this section shall be made for those items specifically requested in writing by the **OWNER**. The value of any work performed in this Section shall be determined by one or more of the following methods in the order of precedence listed below.

A. Unit prices previously approved.

B. An agreed lump sum.

C. The actual cost for labor, materials, supplies, equipment and other services necessary to complete the work. In addition, there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the work to cover the cost of general overhead and profit.

The amount specified for Force Account in the Bid Documents is an estimate that is provided so each potential bidder has an equal opportunity in the bidding. The amount does not in any way represent what work may be requested or the quantity or value of the work. The **CONTRACTOR** shall only be compensated for the actual work requested and performed. A final Change Order will be issued to reflect the amount of work actually completed to adjust the final contract amount.

See Section 00310 Bid Schedule for Bid Items.

END OF SECTION

SECTION 01320

PROJECT MEETINGS, SCHEDULES, AND REPORTS

PART 1 - GENERAL

1.1 Summary

A. This Section includes the following administrative and procedural requirements.

B. Project Meetings

1. Preconstruction conference.

2. Coordination schedules.

3. Progress meetings.

4. Coordination meetings.

C. Schedules and Reports

1. Initial coordination schedules.

2. Construction progress schedule.

3. Procurement schedule.

4. Construction progress reports.

5. Schedule of values.

6. Special reports.

D. Related Work Specified Elsewhere

Submittal ..... Section 01330

1.2 Project Meetings

A. Preconstruction Conference

1. Engineer will conduct a meeting as described in Section 800, Special Provisions, Paragraph 4.0, to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during performance of the Work.

2. Preconstruction conference shall be attended by the following.

a. Contractor and his superintendent.

b. Engineer.

c. Representative(s) of Owner.

d. Representatives of principal Subcontractors and Suppliers.

3. Meeting Agenda

a. Construction schedules.

b. Critical Work sequencing.

c. Designation of responsible personnel.

d. Project coordination.

e. Procedures and Processing of:

(1) Field decisions.

(2) Substitutions.

(3) Submittals.

(4) Change Orders.

(5) Applications for Payment.

f. Procedures for testing.

g. Procedures for maintaining record documents.

h. **Use of Premises:**

(1) Office, work, and storage areas.

(2) Owner's requirements.

i. Construction facilities, controls, and construction aids.

j. Temporary utilities.

k. Safety and first-aid.

l. Security.

4. **Location of Meeting:** To Be Determined.

5. **Reporting:**

a. Within 5 working days after the meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.

b. Contractor shall provide copies to Subcontractors and major Suppliers.

B. Coordination Schedules

1. Engineer will conduct a meeting at least 10 days before submission of the first Application for Payment to finalize the initial coordination schedules requested under ARTICLE 1.3 this Section.

2. **The meeting shall be attended by:**

a. Contractor and his superintendent.

b. Representatives of principal Subcontractors and Suppliers.

c. Engineer.

d. Representative(s) of Owner.

C. Progress Meetings

1. Engineer will schedule and conduct a meeting weekly and at other times requested by Engineer. Representatives of the Owner, Engineer, and Contractor shall be present at each meeting. With Engineer's concurrence, Contractor may request attendance by representatives of Subcontractors, Suppliers, or other entities concerned with current program or involved with planning, coordination, or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

2. Contractor and each Subcontractor represented shall be prepared to discuss the current construction progress report and any anticipated future changes to the schedule. Each Subcontractor shall comment on the schedules of Contractor and other Subcontractors and advise if their current progress or anticipated activities are compatible with that Subcontractor's Work.

3. If one Subcontractor is delaying another, Contractor shall issue such directions as are necessary to resolve the situation and promote construction progress.

4. Meeting Agenda:

a. Review of construction progress since previous meeting.

b. Field observations, interface requirements, conflicts.

c. Problems which impede construction schedule.

d. Off-site fabrication.

e. Delivery schedules.

f. Submittal schedules and status.

g. Site use.

h. Temporary facilities and services.

i. Hours of Work.

j. Hazards and risks.

k. Housekeeping.

l. Quality and Work standards.

m. Change Orders.

n. Documentation of information for payment requests.

o. Corrective measures and procedures to regain construction schedule if necessary.

p. Revisions to construction schedule.

q. Review of proposed activities for succeeding Work period.

r. Review proposed Contract modifications for:

(1) Effect on construction schedule and on completion date.

(2) Effect on other contracts of the Project.

s. Other business.

5. Location of Meetings: Meeting shall be held at the office of the Project Engineer.

6. Reporting:

a. Within 5 working days after each meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.

b. Contractor shall distribute copies to principal Subcontractors and Suppliers.

1.3 Schedules and Reports

A. Initial Coordination Schedules

1. Within 10 days after the Effective Date of the Agreement, Contractor shall submit to Engineer for review and acceptance:

a. A preliminary procurement schedule of Equipment and Materials.

b. A preliminary schedule of values for partial pay purposes.

c. A preliminary schedule of Submittals, as stated in Section 01330.

d. Preliminary cash requirement prediction.

B. Baseline Construction Schedule

1. Within 20 days after issuance the Notice of Award of the Contract, Contractor shall submit to Engineer for review and acceptance a detailed baseline construction schedule employing the critical path scheduling method.

a. The schedule shall show the Work in a horizontal bar chart, and indicate the start date, duration, and end date for each activity.

b. The Contractor shall submit to the Engineer, 7 paper copies and 1 electronic copy in Suretrak® Version 3.0 or approved compatable format for review. Sheet size shall be a minimum 11 x 17-inches

c. No single activitiy shall be more than 15 days in duration.

d. The Contractor shall include all work by Subcontractors in the baseline construction schedule.

e. The schedule shall be resourced base and include work breakdown structures.

f. The schedule shall indicate milestone from which the Contractor's progress will be measured for the purpose of determining liquidated damages.

g. In addition to submitting the schedule on paper, the schedule shall be provided electronically in a format compatable with Primaversa SureTrack® Version 3.0 or Primavera Project Planner (P3) Version 3.1 scheduling software.

h. Within each activity, indicate estimated completion percentage in 10% increments.

i. Scale and spacing shall allow room for notations and revisions.

2. After the construction schedule is approved, the schedule shall serve as the Contractor's Baseline Schedule for all Work on the project. Activity ID's shall not be changed without the Engineer's written permission from this point forward. New activity numbers will be allowed, but only for new work outside the original project baseline schedule activities.

3. If necessary, the Contractor shall provide subschedules to define in more detail, critical portions of the baseline schedule, including inspections and tests.

4. The Contractor shall coordinate the baseline construction progress schedule with the schedule of values, Submittal schedule, procurement schedule, progress reports, and payment requests.

5. The Contractor shall revise the construction baseline schedule after each meeting, event, or activity where revisions have been recognized and accepted in accordance with the GENERAL CONDITIONS.

6. The Contractor shall update and submit 7 paper copies and 1 electronic copy in SureTrak® Version 3.0 compatable format of the revised schedule to the Engineer at least once each month to show actual progress compared to the

originally accepted baseline construction schedule and any proposed changes in the schedule of remaining Work. The revised schedule shall be updated and submitted to the Engineer prior to each monthly payment request. Engineer's approval for payment will not be recommended to be paid by the Owner until the monthly revised schedule is accepted by the Engineer. Include the schedule with construction progress report (See Section 1320.1.3.D).

C. Procurement Schedule

1. After submittal of preliminary procurement schedule as stated above under "Initial Coordination Schedules", submit a detailed schedule for procurement of Equipment and Materials to be furnished by Contractor, Subcontractors, manufacturers, and Suppliers. Do not include minor items which are known to be regularly stocked by local suppliers or readily available upon short notice. Submit to Engineer for review with the construction progress schedule.

2. Engineer will review and comment on the schedule for procurement, and upon agreement with Contractor concerning any necessary revisions, the schedule will be accepted.

3. Procurement schedule shall coincide with the construction progress schedule and the Submittal schedule, and shall indicate the date each item will be needed at the Site and the time required for delivery after order is placed.

4. Update the accepted schedule for procurement at least once each month to show the status of orders placed, Submittals, and delivery. Submit with the construction progress report.

5. If requested by Engineer, submit copies of purchase orders placed by Contractor or Subcontractors.

D. Construction Progress Reports

1. Submit a report on actual construction progress on a monthly basis. More frequent reports may be required should the Work fall behind the accepted schedule.

a. Submit a weekly report to coordinate with and supplement the monthly construction progress report and which details Work scheduled for the following one-week interval, including:

(1) Work activities which will occur.

(2) Number and size of crews.

(3) Construction equipment on Site.

(4) Major items of Equipment and Material to be installed.

b. Format shall be on 11 x 17-inch paper, submitted to Engineer in 7 copies.

2. Construction progress reports shall consist of the revised construction progress schedule and a narrative report which shall include but not be limited to the following:

a. Comparison of actual progress to planned progress shown on originally accepted schedule.

b. Summary of activities completed since the previous construction progress report.

c. Identification of problem areas.

d. A description of current and anticipated delaying factors, if any.

e. Impact of possible delaying factors.

f. Proposed corrective actions.

3. Submit a construction progress report to Engineer with each application for partial payment. Work reported complete but not readily apparent to Engineer must be substantiated with supporting data when requested by Engineer.

4. If a schedule update reveals that, through no fault of Owner, the Work is likely to be completed later than the Contract completion date, Contractor shall:

a. Establish a plan for making up lost time.

(1) Increase number of workers, or

(2) Increase amount or kinds of tools, or

(3) Work overtime or additional shifts, or

(4) A combination of 2 or more of the above 3 actions.

b. Submit plan to Owner and Engineer before implementing the plan.

c. Take actions as necessary to get the Work back on schedule at no additional cost to Owner.

E. Schedule of Values

1. Submit as set forth in GENERAL CONDITIONS, based on the preliminary schedule of values.

2. Coordinate preparation of schedule of values with preparation and content of construction progress schedule.

3. Content

a. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.

b. Follow the construction progress schedule breakdown of Work activities as format for listing component items and assigning values.

c. For each major line item list subvalues of major products or operations under the item.

(1) Each item shall include a directly proportional amount of the Contractor's overhead and profit.

(2) For items on which progress payments will be requested for stored materials received, but not installed, break down the value into:

(a) The cost of the materials, delivered and unloaded, including taxes paid unless taxes are exempted.

(b) The total installed value.

d. The sum of all values listed in the schedule shall equal the total Contract Price.

F. Special Reports

1. When an event of an unusual and significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by Contractor's personnel, an evaluation of the results or effects, and similar pertinent information. Advise the Owner in advance when such events are known or predictable.

2. Submit original report to Owner and copy to Engineer.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01320 ****

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SECTION 01325

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 Summary

A. This Section specifies administrative and procedural requirements for construction photographs.

1.2 Submittals

A. Submit CD's as specified in Section 01330, Submittals and in PART 3 - this Section.

B. Photographer shall submit a digital sample set of the type and quality required during construction, for review and acceptance by Engineer.

1.3 Quality Assurance

A. All photographs shall be taken and processed by a qualified photographer with experience in construction photography.

PART 2 - PRODUCTS

2.1 Photographic Requirements

Specified in PART 3, this Section.

PART 3 - EXECUTION

3.1 Route Photographs

A. Contractor shall be responsible for photographs along the entire construction route to show the existing and general condition of the site prior to construction. Photographs shall be taken a minimum of 50 feet intervals along the alignment and at each individual residence. Each photo will be required to have a date stamp in the lower right corner.

B. Photographs shall be taken of the following areas and at the following times.

1. Existing Site conditions before Site work is started. Number of views shall be adequate to cover the Site.

2. Finished Project after completion of Work. Number of views shall be adequate to show the finished Work. It is particularly important to provide a view of the restoration of each property upon completion of construction.

3. If Project is not completed during the Contract Time or authorized extensions, photographs shall continue to be taken at no increase in Contract Price.

C. The principal reason for obtaining photographs is so that items such as cracked curbs, and/or driveways, shrubs, trees, landscaping, decorative walls, privacy walls, mail boxes, lighting, broken pavement or sidewalks, or other problems along the construction route may be more clearly shown and recorded. This will to some degree preclude the possibility of post construction litigation between Contractor and property owners adjacent to the Work.

D. Digital Images

1. Submit two (2) complete sets of digital image electronic files on a CD for each area of work prior to starting work.

a. Provide images in JPEG format, with minimum sensor size of 5.0 mega pixels.

b. Submit images that have same aspect ratio as the sensor, uncropped.

c. The photos of each residence and areas adjacent shall be labeled electronically on each photograph by address.

d. Each disk submitted shall be labeled with Project name, area and street

e. Identify electronic media with date digital photographs were taken

E. Photographic Print Identification

1. .Identify each photographic print with a label on the reverse side of the print. The label shall contain the Contract Name and Number, date of exposure, address or location of photograph and description of view.

2. All prints shall be color, smooth glossy finish 8x10 in size or approved equal, and inserted into archival quality polypropylene photographic binder pages and punched for insertion into standard 3-ring binder.

3. Provide two prints of each view.

F. Deliver prints to Engineer.

3.2 Property Photographs for Service Lateral Construction and Septic Tank Closure

Photographs shall be taken at each residential property in sufficient detail to record the existing condition of the property and all existing improvements including trees, shrubs decorative rock and other ornamental or functional improvements. The alignment of the service lateral must be clearly visible, from the property line to the connection point of the service lateral at the house prior to taking photographs of the property. There shall be a minimum of 5 photographs identifying the alignment of the service lateral and the surrounding property and improvements. The photographs must be approved by the Engineer and Owner prior to any construction activities on the property. When taking property photos, the street needs to be properly defined.

3.3 Additional Photographs

A. From time to time Engineer may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order, and are not included in the Contract Price or an Allowance.

1. Engineer will give the photographer 3 days' notice, where feasible.

2. In emergency situations, the photographer shall take additional photographs within 24 hours of Engineer's request.

3. Circumstances that could require additional photographs include, but are not limited to:

a. Substantial Completion of a major phase or component of Work.

b. Owner's request for special publicity photographs.

c. Special events planned at Project Site.

d. Immediate follow-up when on-site events result in construction damage or losses.

e. Photographs to be taken at fabrication locations away from Project Site.

f. Extra record photographs at time of final acceptance.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01325 ****

SECTION 01330

SUBMITTALS

PART 1 - GENERAL

1.1 Summary

A. This Section includes definitions, descriptions, transmittal, and review of Submittals.

B. Related Work Specified Elsewhere:

Project Meetings, Schedules, and Reports .....Section 01320
Construction Photographs .....Section 01325
Equipment and Materials.....Section 01600
Substitutions.....Section 01631
Contract Closeout.....Section 01780

1.2 General Information

A. Definitions

1. Shop Drawings, product data, and Samples are technical Submittals prepared by Contractor, Subcontractor, manufacturer, or Supplier and submitted by Contractor to Engineer as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance, or technical properties.

a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.

b. Product data includes standard printed information on materials, products, and systems; not custom-prepared for this Project, other than the designation of selections from available choices.

c. Samples include both fabricated and not fabricated physical examples of materials, products, and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of Samples, which are too large to be handled in the specified manner for transmittal of Sample Submittals.

2. Informational Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or Samples.

a. Technical reports include laboratory reports, tests, technical procedures, technical records, and Contractor's design analysis.

b. Administrative Submittals are those non technical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, Bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, Project record data, security/protection/safety data, and similar type Submittals.

c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is called for in the Specifications.

3. Refer to ARTICLES 1.3 and 1.4 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements

1. Submittals such as Shop Drawings and product data shall be of suitable quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be useable for further reproduction to yield legible hard copy.

2. Documents submitted to Engineer that do not conform to specified requirements shall be subject to rejection by Engineer, and upon request by Engineer, Contractor shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. Contractor's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve Contractor (or his Subcontractors) from meeting the required schedule for Submittals.

C. Language and Dimensions

1. All words and dimensional units shall be in the English language.

2. Metric dimensional unit equivalents may be stated in addition to the English units. However, English units of measurement shall prevail.

D. Submittal Completeness

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable Engineer to review the information effectively.

2. Where standard drawings are furnished which cover a number of variations of the general class of Equipment, each drawing shall be annotated to indicate exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" will not be an acceptable means of annotating Submittals. Annotation shall also include proper identification of the Submittal permanently attached to the drawing.

3. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. Contractor may use a reproduction of Contract Drawings for erection drawings to indicate information on erection or to identify detail drawing references. Whenever the Drawings are revised to show this

additional Contractor information, Engineer's title block shall be replaced with a Contractor's title block, and Engineer's professional seal shall be re moved from the drawing. The Contractor shall revise these erection drawings for subsequent Engineer revisions to the Contract Drawings.

1.3 Technical Submittals

A. Items shall include, but not be limited to, the following:

1. Manufacturer's specifications.

2. Catalogs, or parts thereof, of manufactured Equipment.

3. Shop fabrication and erection drawings.

4. Instruction books and operating manuals.

5. Material lists or schedules.

6. Performance tests on Equipment by manufacturers.

7. Concrete mix design information.

8. All drawings, catalogs or parts thereof, manufacturer's specifications and data, samples, instructions, and other information specified or necessary:

a. For Engineer to deter mine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.

9. Equipment List.

10. Hourly rate for equipment and labor.

B. Schedule of Submittals

1. Schedule all submittals required prior to fabrication, manufacture, or installation for submission within 14 calendar days of the Notice to Proceed. Prepare for Engineer's concurrence, a sche dule for submission of all Submittals specified or necessary for Engineer's approval of the use of Equipment and Materials proposed for

incorporation in the Work or needed for proper installation, operation, or maintenance. Submit the schedule with the procurement schedule and construction progress schedule. Schedule submission of all Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the Work of Contract or or his Subcontractors or any other contractors as described herein.

2. In establishing schedule for Submittals, allow 20 calendar days in Engineer's office for reviewing original Submittals and 5 calendar days in Engineer's office for reviewing resubmittals.

3. The schedule shall indicate the anticipated dates of original submission for each item and Engineer's approval thereof, and shall be based upon at le ast one resubmission of each item.

4. Schedule all Submit tals required prior to fabrication or manufacture for submission within 45 calendar days of the Notice to Proceed. Schedule Submittals pertaining to storage, installation, and operation at the Site for Engineer's approval prior to delivery of the Equipment and Materials.

5. Resubmit Submittals the num ber of times required for Engineer's "Submittal Approved." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining approval of Submittals, will not be grounds for extension of the Contract Times, provided Engineer completes his reviews within the times specified.

C. Transmittal of Submittals

1. All Submittals for Equi pment and Materials furnished by Contractor, Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor.

2. After checking and verifying all field measurements, transmit all Submittals to Engineer for approval as follows:

a. Submittal Information Block:

(1) Affix to all paper copies whether Submittal is prepared by Contractor, Subcontractor, or Supplier. Use transparent decal type Submittal Information Blocks for Shop Drawings and use gummed paper type for product data Submittals. All Submittal Information Blocks needed for this Contract will be furnished to Contractor at no charge at the initial coordination conference.

(2) An example of the Submittal Information Block is included as an appendix to this Section.

b. Mark each Submittal by Project name and number, Contract title and number, and the applicable Specification Section and Article number. Include in the letter of transmittal the Drawing number and title, sheet number (if applicable), revision number, and electronic filename (if applicable). Unidentifiable Submittals will be returned for proper identification.

c. Check and include Contractor's approval for Submittals of Subcontractors , Suppliers, and manufacturers prior to transmitting them to Engineer. Contractor's approval shall co nstitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or Contractor assumes full resp onsibility for doing so, and that Contractor has coordinated each Submittal with the requirements of the Work and the Contract Documents.

d. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.

e. Make all modifications noted or indicated by Engineer and return revised Submittals until approved. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by Engineer on previous

Submittals. After paper copy Submittals have been approved, submit copies thereof for final distribution. Previously approved Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

f. Following completion of the Work and prior to final payment, furnish record documents and approved Samples and Shop Drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in Equipment instruction books and operating manuals as required. All such copies shall be clearly marked "PROJECT RECORD."

g. Keep a copy or sample of each Submittal in good order at the Site.

3. Quantity Requirements:

a. Except as otherwise specified, transmit all Shop Drawings in the following quantities:

(1) **Initial Submittal:** Seven copies to Engineer. Two copies will be returned to Contractor.
(2) **Resubmittals:** Seven copies to Engineer. Two copies will be returned to Contractor.
(3) **Submittal for final distribution:** Seven copies plus the number required by Contractor, to Engineer.
(4) **As-constructed documents:** Four copies to Engineer.

b. Transmit Submittals of product data as follows:

(1) **Initial Submittal:** Seven copies to Engineer. Two copies will be returned to Contractor.
(2) **Resubmittals:** Seven copies to Engineer. Two copies will be returned to Contractor.
(3) **Submittal for final distribut ion:** Seven copies plus the number of copies required by

Contractor, to Engineer, including O&M Manuals.

c. Transmit Submittals for reference only: Four copies to Engineer.

d. Owner may copy and use for internal operations and staff training pur poses any and all document Submittals required by th is Contract and a pproved for final distribution, whether or not such documents are copyrighted, at no additional cost to Owner. If permission to copy any such Submittal for the purposes stated is unreasonably withheld from Owner by Contractor or any Subcontractor, manufacturer, or Supplier, Contractor shall provide to Engineer 50 copies plus the number of copies required by Contractor at each final distribution issue.

4. Information to Manufacturer's District Office: Contractor shall arrange for manufacturers and Suppliers of Equipment and Materials to furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the manufacturer's district office servicing the Owner. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

D. Engineer's Review

1. Engineer will review and take appropriate action on Submittals in accordance with the accepted schedule of Submittals. Engineer's review and approval will be only to determine if the items of Equipment and Materials covered by the Submittals will, after installation or incorporation into the Work, conform to information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to design data reflected in Submittals, which is peculiarly within the special expertise of Contractor or Contractor's

Subcontractors or Suppliers. Review and approval of a component item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval of Shop Drawings, product data, or Samples will not relieve Contractor of responsibility for any deviation from requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission, and Engineer has given written approval of the specific deviation. Approval by Engineer shall not relieve Contractor from responsibility for errors or omissions in Submittals.

E. Submittal Action Stamp

1. Engineer's review action stamp, appropriately completed, will appear on all Submittals of Contractor when returned by Engineer. Review status designations listed on Engineer's action stamp are defined as follows:

A - SUBMITTAL APPROVED: Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work. Contractor is to proceed with fabrication or procurement of the items and with related Work. Copies of the Submittal are to be transmitted to Engineer for final distribution.

B - SUBMITTAL APPROVED AS NOTED (RESUBMIT): Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work in accordance with Engineer's notations. Contractor is to proceed with fabrication or procurement of the items and with related Work in accordance with Engineer's notations and is to submit a revised Submittal responsive to notations marked on the returned Submittal or written in the letter of transmittal.

C - SUBMITTAL RETURNED FOR REVISION (RESUBMIT): Signifies Equipment and Material represented by the Submittal appears to conform with the design concept

and comply with the intent of the Contract Documents but information is either insufficient in detail or contains discrepancies which prevent Engineer from completing his review. Contractor is to resubmit revised information responsive to Engineer's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items repres ented by the Submittal and related Work is not to proceed until the Submittal is approved.

D - SUBMITTAL NOT APPROVED (SUBMIT A NEW): Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the Work. Contractor is to provide Submittals responsive to the Contract Documents.

E - PRELIMINARY SUBMITTAL: Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. Contractor is to submit such additional information to permit layout and related activities to proceed.

F - FOR REFERENCE, NO APPROVAL REQUIRED: Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to Engineer or Owner in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented there by conform with the design concept or comply with the intent of the Contract Documents. Engineer reviews such Submittals for general content but not for basic details.

G - DISTRIBUTION COPY (PREVIOUSLY APPROVED): Signifies Submittals which have been previously approved and are being distributed to Contractor, Owner, Resident Project Representative, and others for coo rdination and construction purposes.

F. Instruction Books and Operating Manuals

1. Equipment instruction books and operating manuals prepared by the manufacturer shall include the following:

a. Index and tabs.

b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers.

c. Applicable drawings.

d. Warranties and guarantees.

e. Address of nearest manufacturer-authorized service facility.

f. All additional data specified.

2. Information listed above shall be bound into hard-back binders of three-ring type. Sheet size shall be 8-1/2 x 11. Binder color shall be white. Capacity shall be a minimum of 1-1/2-inches, but sufficient to contain and use sheets with ease.

a. Provide with following accessories:

(1) Label holder.
(2) Business card holder.
(3) Sheet lifters.
(4) Horizontal pockets.

b. The following information shall be imprinted, inserted or affixed by label on the binder front cover:

(1) Equipment name.
(2) Manufacturer's name.
(3) Project name.
(4) Contract name and number.

c. The following information shall be imprinted, inserted, or affixed by label on the binder spine:

(1) Equipment name.
(2) Manufacturer's name.
(3) Volume number (if applicable).

G. Samples

1. Office Samples shall be of sufficient size and quantity to clearly illustrate the following:

a. Functional characteristics of the product, with integrally related parts and attachment devices.

b. Full range of color, texture, and pattern.

2. Field Samples and Mock-ups:

a. Contractor shall erect field Samples and mock-ups at the Project Site and at a location acceptable to Engineer.

b. Size or area shall be as specified in the respective Specification Section.

c. Fabricate each Sample and mock-up complete and finished.

d. Remove mock-ups at conclusion of Work or when acceptable to the Engineer if not a permanent part of construction.

1.4 Information Submittals

A. Informational Submittals are comprised of technical reports, administrative Submittals, and guarantees, which relate to the Work, but do not require Engineer approval prior to proceeding with the Work. Informational Submittals include:

1. Welder qualification tests.

2. Welding procedure qualification tests.

3. X-ray and radiographic reports.

4. Hydrostatic testing of pipes.

5. Field test reports.

6. Concrete cylinder test reports.

7. ASME pressure vessel test reports.

8. Certification on Materials:

a. Steel mill tests.
b. Brick and concrete masonry unit lab tests.

9. Soil test reports.

10. Piping stress analysis.

11. Warranties and guarantees.

B. Transmittal of Informational Submittals

1. All informational Submittals furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor unless otherwise specified.

a. Identify each informational Submittal by Project name and number, Contract title and number, and the Specification Section and Article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

b. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.

2. Quantity Requirements:

a. Technical reports and administrative Submittals except as otherwise specified:

(1) Engineer: Two copies.

b. Written Certificates and Guarantees:

(1) Engineer: Two copies.

3. Test Reports:

a. Responsibilities of Contractor, Owner, and Engineer regarding tests and inspections of Equipment and Materials and completed Work are set forth elsewhere in these Contract Documents.

b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports as follows:

(1) Owner: Two copies.
(2) Engineer: One copy.
(3) Resident Project Representative: One copy.
(4) Contractor: Two copies.
(5) Manufacturer or Supplier: One copy.

C. Engineer's Review

1. Engineer will review informational Submittals for indications of Work or Material deficiencies.

2. Engineer will respond to Contractor on those informational Submittals, which indicate Work or Material deficiency.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION – Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01330 ****

SECTION 01420

DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Definitions

1. Basic contract definitions used in the Contract Documents are defined in the GENERAL CONDITIONS. Definitions and explanations are not necessarily either complete or exclusive, but are general for the Work.

2. General Requirements are the provisions or requirements of DIVISION 1 Sections, and which apply to the entire Work of the Contract.

B. Related Information Specified Elsewhere: Specification standards and associations applicable to the Work are specified in each Section.

1.2 Specification Format and Content Explanations

A. Specification Format: The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's (CSI) Section Format and MasterFormat numbering system. Some portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.

1. Divisions and Sections: For convenience, a basic unit of Specification text is a "Section," each unit of which is numbered and named. These are organized with related Sections, into "Divisions," which are recognized as the present industry consensus on uniform organization and sequencing of Specifications. The Section title is not intended to limit meaning or content of Section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.

2. Section Numbering: Used for identification and to facilitate cross-references in Contract Documents. Sections

are placed in numeric sequence; however, numbering sequence is not complete, and listing of Sections in Table of Contents at beginning of the Project Manual must be consulted to determine numbers and named of Specification Sections in these Contract Documents.

3. **Page Numbering:** Numbered independently for each Section. Section number is shown with page number at bottom of each page, to facilitate location of text.

4. **Parts:** Each Section of Specifications generally has been subdivided into three basic "parts" for uniformity and convenience (PART 1 - GENERAL, PART 2 - PRODUCTS, and PART 3 - EXECUTION). These "Parts" do not limit the meaning of text within. Some Sections may not contain all three "Parts" when not applicable, or may contain more than three "Parts" to add clarity to organization of Section.

5. **Underscoring of Titles:** Used strictly to assist reader of Specification in scanning text for key words in content. No emphasis on or relative importance is intended except where underscoring may be used in body of text to emphasize a duty, critical requirement, or similar situation.

6. **Project Identification:** Project file number and identification are recorded at bottom of each page of Specifications to minimize possible misuse of Specifications, or confusion with other Project Specifications.

B. Specification Content

1. These Specifications apply certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

   a. **Imperative and Streamlined Language:** These Specifications are written in imperative and abbreviated form. This imperative language of the technical Sections is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall," "the Contractor shall," and " shall be," and similar

mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated imperatively or otherwise.

b. Specifying Methods: The techniques or methods of specifying requirements varies throughout text, and may include "prescriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of Work has no bearing on requirements for another unit of Work.

c. Overlapping and Conflicting Requirements : Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, notify Engineer for a decision as specified in GENERAL CONDITIONS.

d. Abbreviations: Throughout the Contract Documents are abbreviations implying words and meanings which shall be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and in conjunction with coordination of Specification requirements with notations on Drawings and in schedules. These are normally defined at first instance of use. Organizational and association names and titles of general standards are also abbreviated.

C. Assignment of Specialists: In certain instances, Specification text requires that specific Work be assigned to specialists in the operations to be performed. These specialists shall be engaged for performance of those units of Work, and assignments are requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, enforcement of building codes and similar regulations governing the Work, local trade and union

jurisdictions, and similar conventions. Nevertheless, final responsibility for fulfillment of Contract requirements remains with Contractor.

D. Trades: Except as otherwise specified or indicated, the use of titles such as "carpentry" in Specification text, implies neither that the Work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

1.3 Drawing Symbols

A. Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated. Refer instances of uncertainty to Engineer for clarification.

1.4 Industry Standards

A. Applicability of Standards : Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference and are stated in each Section.

1. Referenced standards, referenced directly in Contract Documents or by governing regulations, have precedence over nonreferenced standards which are recognized in industry for applicability to the Work.

2. Where compliance with an industry standard is required, standard in effect shall be as stated in GENERAL CONDITIONS.

3. Where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected, the Engineer will decide whether to issue a Change Order to proceed with the updated standard.

4. In every instance the quantity or quality level shown or specified shall be the minimum to be provided or

performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Engineer for a decision before proceeding.

5. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

a. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from the publication source.

B. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applic able to the context of the text provision.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01420 ****

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SECTION 01520

FIELD OFFICES AND SHEDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary field offices and other structures required for office and storage space required by Contractor.

B. Related Work Specified Elsewhere

Equipment and Materials.....Section 01600
Temporary Utilities and Facilities .....Section 01560

PART 2 - PRODUCTS

2.1 Field Offices

A. General

1. Provide trailers, mobile buildings, or buildings constructed with floors raised aboveground, with steps, landings, and railings at entrance doors.

2. Buildings shall be structurally sound, secure, and weathertight.

3. Provide appropriate type fire extinguishers at each office and storage area.

4. Maintain offices during progress of the Work.

5. Install office spaces ready for occupancy 15 days after date stated in Notice to Proceed.

B. Contractor's Office

1. Provide a field office for Contractor's superintendent on the Site.

2. It shall be of size required for general use, with lights, heat, furnishings, telephone service, and other necessary facilities and utilities required by Contractor's operations.

2.2 Storage Sheds and Trailers

A. On Site

1. Provide temporary buildings or trailers needed for storage of Equipment and Materials installed under this Contract (and those furnished by Owner or others under separate contract).

2. Provide ventilation and heating as required by Equipment and Material stored.

B. Off Site

1. Advise Engineer of any arrangements made for storage of Equipment and Materials in a place other than Owner's Site. Furnish evidence of insurance coverage with Application for Payment in conformance with the GENERAL CONDITIONS.

PART 3 - EXECUTION

3.1 Location, Installation and Maintenance

A. General

1. Place temporary buildings, trailers, and stored materials in locations acceptable to Owner or Engineer.

2. Install field offices and sheds to resist winds and elements of the locality where installed.

3. Remove when no longer needed at the Site or when Work is completed.

4. Keep approach walks free of leaves, mud, water, ice, or snow.

5. At completion of Work, remove temporary buildings and trailers, foundations (if any), utility services, and debris.

6. Prepare ground or paved areas as specified in applicable Sections.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01520 ****

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SECTION 01530

TEMPORARY BARRIERS AND CONTROLS

PART 1 - GENERAL

1.1 Summary

A. This Section includes General Requirements for:

1. Safety and protection of Work.

2. Safety and protection of existing property.

3. Barriers.

4. Environmental controls.

5. Traffic control and use of roadways.

B. Related Work Specified Elsewhere

Temporary Utilities and Facilities.....Section 01560

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 Safety and Protection of Work and Property

A. General

1. Provide for the safety and protection of the Work as set forth in GENERAL CONDITIONS. Provide protection at all times against rain, wind, storms, frost, freezing, condensation, or heat so as to maintain all Work and Equipment and Materials free from injury or damage. At the end of each day, all new Work likely to be damaged shall be appropriately protected.

2. Notify Engineer immediately at any time operations are stopped due to conditions, which make it impossible to continue operations safely or to obtain proper results.

3. Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, floors, pits, trenches, manholes, and ducts free of water.

4. Protect floors from damage by proper covering and care when handling heavy equipment, painting, or handling mortar or other such materials. Use proper cribbing and shoring to prevent overloading of floors while moving heavy equipment. Provide metal pans under pipe-threading machines and clean such pans daily, keeping oil off floors. Restore floors to former condition where damaged or stained.

5. Concrete floors less than 28 days old shall not be loaded without written permission from Engineer.

6. Restrict access to roofs except as required by the Work. Where access is required, provide protection with plywood, boards, or other suitable materials.

7. Any equipment left in the Right-of-Way over night shall be properly barricaded, including a minimum of two lighted barricades.

B. Property Other than Owner's

1. Provide for the safety and protection of property as set forth in the GENERAL CONDITIONS. Report immediately to the owners thereof and promptly repair damage to existing facilities resulting from construction operations.

2. Names and telephone numbers of representatives of agencies and utilities having jurisdiction over streets and utilities in the Work area can be obtained from Engineer for the agencies listed below. Concerned agencies or utilities shall be contacted a minimum of 24 hours prior to performing Work, closing streets and other traffic areas, or excavating near underground utilities or pole lines.

a. Water.

b. Gas.

c. Sanitary sewers.

d. Storm drains.

e. Pipeline companies.

f. Telephone.

g. Electric.

h. Municipal streets.

i. State highways.

j. City engineer.

k. Fire.

l. Police.

3. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

4. Where fences are to be breached on private property, the owners thereof shall be contacted and arrangements made to ensure proper protection of any livestock or other property thus exposed.

5. The applicable requirements specified for protection of the Work shall also apply to the protection of existing property of others.

6. Before acceptance of the Work by Owner, restore all property affected by Contractor's operations to the original or better condition.

3.2 Barriers

A. General

1. Furnish, install, and maintain suitable barriers as required to prevent public entry, protect the public, and to protect the Work, existing facilities, trees, and plants from construction operations. Remove when no longer needed or at completion of Work.

2. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards or regulatory agencies.

3. Barriers shall be of a neat and reasonable uniform appearance, structurally adequate for the required purposes.

4. Maintain barriers in good repair and clean condition for adequate visibility. Relocate barriers as required by progress of Work.

5. Repair damage caused by installation and restore area to original or better condition. Clean the area.

B. Tree and Plant Protection

1. Preserve and protect existing trees and plants.

2. Provide temporary barriers around each, or around each group of trees and plants. Construct to a height of 6 feet around trees, and to a height to adequately protect plants.

3. Employ qualified tree surgeon to remove and to treat cuts.

4. Protect root zones of trees and plants as follows:

a. Do not allow vehicular traffic or parking.

b. Do not store materials or products.

c. Prevent dumping of refuse or chemically injurious materials or liquids.

d. Prevent piddling or continuous running water.

5. Carefully supervise excavating, grading and filling, and subsequent construction operations to prevent damage.

6. Remove and replace similar size & type (or agreed upon by homeowner), or suitably repair, trees and plants which are damaged or destroyed due to construction operations, and which were designated to remain.

3.3 Environmental Conditions

A. Dust Control

1. Provide proactive positive methods and apply dust control materials to minimize the raising of dust from construction operations; and to prevent airborne dust from dispersing into the atmosphere throughout the duration of the project day and night. ADEQ "Air Quality Permit Requirements" shall be adhered to. Fines may result if found to be out of compliance.

2. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

3. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

B. Water and Erosion Control

1. Provide methods to control surface water to prevent damage to the Project, the Site, or adjoining properties.

2. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.

a. Hold the areas of bare soil exposed at one time to a minimum.

b. Provide temporary control measures such as berms, dikes, and drains.

3. Control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels, and other construction areas; and to direct drainage to proper runoff.

4. Provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and groundwater.

5. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the Site or to adjoining areas.

6. Provide temporary drainage where the roofing or similar waterproof deck construction is completed prior to the connection and operation of the permanent drainage piping system.

C. Debris Control and Clean-Up

1. Keep the premises free at all times from accumulations of debris, waste materials, and rubbish caused by construction operations and employees. Responsibilities shall include:

a. Adequate trash receptacles about the Site, emptied promptly when filled.

b. Periodic cleanup to avoid hazards or interference with operations at the Site and to maintain the Site in a reasonably neat condition.

c. The keeping of construction materials such as forms and scaffolding neatly stacked.

d. Immediate cleanup to protect the Work by removing splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from walls, floors, and metal surfaces before surfaces are marred.

2. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.

3. Final cleanup is specified in Section 01780 - CONTRACT CLOSEOUT.

D. Pollution Control

1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of hazardous or toxic substances from construction operations.

2. Provide equipment and personnel, perform emergency measures required to contain any spillages, and remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-Site in approved locations, and replace with suitable compacted fill and topsoil.

3. Take special measures to prevent harmful substances from entering public waters, sanitary, or storm sewers.

3.4 Traffic Control and Use of Roadways

A. Traffic Control:

1. Provide, operate, and maintain equipment, services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at Site entrances, on-Site access roads, and parking areas. This includes traffic signals and signs, flagmen, flares, lights, barricades, and other devices or personnel as necessary to adequately protect the public. Any traffic control devices used during nighttime hours shall have functioning flashing lights.

2. Remove temporary equipment and facilities when no longer required. Restore grounds to original, better, or specified condition when no longer required.

3. Provide and maintain suitable detours or other temporary expedients if necessary.

4. Bridge over open trenches where necessary to maintain traffic.

5. Consult with governing authorities to establish public thoroughfares, which will be used as haul routes and Site access. All operations shall meet the approval of owners or agencies having jurisdiction.

B. Maintenance of Roadways

1. Repair roads, walkways, and other traffic areas damaged by operations. **Keep traffic areas as free as possible of excavated materials and maintain in a manner to eliminate dust, mud, and hazardous conditions.**

2. All operations and repairs shall meet the approval of owners or agencies having jurisdiction.

3. The CONTRACTOR will provide dust control, be required to grade, smooth-out, fill holes, and generally maintain the streets where the pavement has been removed. This maintenance will be done daily, if necessary, to allow local traffic to travel through the area on an acceptable surface.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01530 ****

SECTION 01560

TEMPORARY UTILITIES AND FACILITIES

PART 1 - GENERAL

1.1 Summary

A. This Section includes requirements of a temporary nature not normally incorporated into final Work. It includes the following:

1. Utility services.

2. Construction and support facilities.

3. Construction aids.

4. Safety and health.

5. Fire protection.

B. Related Work Specified Elsewhere

Temporary Barriers and Controls .....Section 01530
Field Offices and Sheds.....Section 01520

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American National Standards Association (ANSI)

A10 Series - Safety Requirements for Construction and Demolition.

2. National Electrical Contractors Association (NECA)

3. Electrical Design Library - Temporary Electrical Facilities.

4. National Fire Protection Association (NFPA)

10 - Portable Fire Extinguishers.

70 - National Electrical Code.

241 - Safeguarding Construction, Alterations, and Demolition Operations.

a)

B. National Electrical Manufacturers Association (NEMA).

C. Underwriters Laboratories (UL).

D. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Building Code requirements.

2. Health and safety regulations.

3. Utility company regulations.

4. Police, Fire Department, and rescue squad rules.

5. Environmental Protection Regulations.

E. Standards

1. Comply with NFPA 10 and 241, and ANSI A10 Series standards "Temporary Electrical Facilities."

2. Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

F. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.3 Submittals

A. Temporary Utilities

Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.4 Project Conditions

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not allow hazardous, dangerous, unsanitary conditions, or public nuisances to develop or persist on the Site.

PART 2 - PRODUCTS

2.1 Materials and Equipment

A. Provide new materials and equipment. If acceptable to Engineer, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and equipment suitable for the use intended, of capacity for required usage, and meeting applicable codes and standards. Comply with requirements of DIVISIONS 2 through 16.

PART 3 - EXECUTION

3.1 Temporary Utilities

A. General

1. Furnish, install, and maintain temporary utilities required for adequate construction, safety, and security. Modify, relocate, and extend systems as Work progresses. Repair damage caused by installation or use of temporary facilities. Remove on completion of Work or until service or facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 Temporary Sanitary Facilities

A. Contractor-Furnished Facilities

1. Furnish, install, and maintain temporary sanitary facilities for use through construction period. Remove on completion of Work.

2. Provide for all construction workers under this Contract and representatives at the Site.

3. Toilet facilities shall be of the chemical, aerated recirculation, or combustion type, properly vented, and fully enclosed with a glass- fiber-reinforced polyester shell or similar nonabsorbent material.

4. Drinking Water Fixtures: Provide containerized tap dispenser type drinking water units.

5. Supply and maintain toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility. Provide appropriate covered waste containers for used material.

3.3 Temporary Safety and Health

A. General: Contractor shall be responsible for development of safety and health programs for personnel at Project Site as specified in the GENERAL CONDITIONS.

3.4 Installation and Removal

A. Relocation: Relocate construction aids as required by progress of construction, storage limitations, or Work requirements and to accommodate requirements of Owner and other contractors at the Site.

B. Removal: Remove temporary materials, equipment, and services when construction needs can be met and allowed by use of permanent construction, or at completion of the Project.

C. Repair: Clean and repair damage caused by installation or by use of temporary facilities.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01560 ****

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.1 Summary

A. This Section includes basic requirements for temporary Project identification and informational signs required during construction.

B. Related Work Specified Elsewhere

Submittals .....Section 01330

1.2 Quality Assurance

A. Design sign and structure to withstand wind and environmental conditions of locality. Provide with finish a dequate to withstand weathering, fading, chipping, and peeling for duration of construction.

1.3 Submittals

A. Submit as specified in Section 01330.

B. Includes, but not limited to, the following

1. Shop Drawings and product data as applicable.

2. Show content, layout, lettering, colors, structure, and foundation.

PART 2 - PRODUCTS

2.1 Identification Signs

A. Project Identification

1. Construct to design, size, and material indicated.

2. Construct structure and framing of wood, structurally adequate to resist design requirements of locality.

3. Construct sign surface of minimum 3/4-inch thickness exterior grade plywood with medium density overlay. Panels shall be of size to minimize joints. Overall size shall be 4' x 8'.

4. Rough hardware shall be galvanized or aluminum.

5. Coating: Paint as specified of colors selected by Engineer.

6. Information Content:

a. Project title, logo, and name of Owner as shown on Contract Documents.

b. Names and titles of authorities.

c. Name and title of Engineer.

d. Name of prime Contractor and major Subcontractors.

B. Contractor Identification: If not part of Project identification sign, provide and install Contractor's standard sign.

2.2 INFORMATIONAL SIGNS

A. Construction

1. This includes signs for traffic, construction workers, and general public in re gards to directions, warnings, hazards, locations of areas, facilities, equipment, and others of a similar nature.

2. Provide signs of design, size, color, and lettering as required by regulatory agencies. Signs shall be painted metal, wood, plastic, or fiberglass and of materials suitable for the conditions in which they are placed, such as weathering and fading.

3. Construct structure and framing of wood or metal, structurally adequate to resist design requirements of area of Project.

PART 3 - EXECUTION

3.1 Installation

A. Project and Contractor Identification Sign

1. Install in appropriate location so as not to obstruct traffic, pedestrians, or construction operations.

2. Erect on framing or foundation, and rigidly brace.

3. Maintain sign in good repair, in a clean and neat condition.

4. Remove upon completion of Project.

B. Informational Signs

1. Install at appropriate locations and in sufficient quantities to assure visibility. Relocate as required by progress of Work.

2. Maintain signs in good repair, in a neat, clean, readable condition.

3. Remove all signs, framing, supports, and foundations upon completion of Project.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01580 ****

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SECTION 01600

EQUIPMENT AND MATERIALS

PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements governing Contractor's selection of products for use in the Project.

B. Related Work Specified Elsewhere

1. For the applicability of industry standards to products specified: DIVISIONS 2 through 16.

2. For submittal of Contractor's construction progress schedule and the Submittal schedule: Section 01320 and Section 01330.

3. For handling requests for substitutions made after award of the Contract: Section 01631.

1.2 Definitions

A. Definitions used in this Article are not intended to change the meaning of other terms used in these Contract Documents, such as "specialties," "systems," "structures," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "Material," "Equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50% or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50%) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational or non-operational parts, whether motorized, or manually operated, that may require service connections, such as wiring or piping.

1.3 Submittals

A. Submittal of preliminary procurement schedule is specified in Section 01320 - PROJECT MEETINGS, SCHEDULES, AND REPORTS.

B. Submittals for products are specified in Section 01330 and in applicable Sections of DIVISIONS 2 through 16.

1.4 Quality Assurance

A. **Source Limitations:** To the fullest extent possible, provide products of the same kind from a single source.

B. **Nameplates:** Along with required labels and operating data, manufacturer or producer's nameplates, imprints, or trademarks may be placed on surfaces exposed to view.

1. **Labels:** Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. **Equipment Nameplates:** Provide a permanent nameplate on each item of service-connected or power-operated Equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer including address (and telephone number).

b. Model and serial number.

c. Capacity.

d. Speed.

e. Ratings.

C. Electronic Equipment Compliance:

1. Contractor warrants that all equipment, devices, items, systems, software, hardware, or firmware provided shall properly, appropriately, and consistently function and accurately process date and time data (including without limitation: calculating, comparing, and sequencing). This warranty supercedes anything in the Specifications or other Contract Documents, which might be construed inconsistently. This warranty is applicable whether the equipment, device, item, system, software, hardware, or firmware is specified with or without reference to a manufacturer's name, make, or model number.

1.5 Transportation and Shipment

A. Shipment Preparation

1. Contractor shall require manufacturers and Suppliers to prepare products for shipment in a manner to facilitate unloading and handling, and to protect against damage, deterioration, or unnecessary exposure to the elements in transit and storage. Provisions for protection shall include the following:

a. Crates or other suitable packaging materials.

b. Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt in motors, electrical equipment, and machinery.

c. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel.

d. Grease packing or oil lubrication in all bearings and similar items.

B. **Marking:** Each product item shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged or marked.

1.6 Product Delivery, Storage and Handling

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the Site and to prevent overcrowding of construction spaces. Allow ample time to avoid delay of the Work.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the Site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. Inspect shipment to assure:

a. Product complies with requirements of Contract Documents and reviewed Submittals.

b. Quantities are correct.

c. Containers and packages are intact and labels are legible.

d. Products are properly protected and undamaged.

5. Store products at the Site in a manner that will facilitate inspection and measurement of quantity or counting of units. Mark deliveries of component parts of Equipment to identify the Equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.

6. Store heavy Materials away from the Project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, and with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

8. Protect motors, electrical Equipment, plumbing fixtures, and machinery of all kinds against corrosion, moisture deteriorations, mechanical injury, and accumulation of dirt or other foreign matter.

9. Protect exposed machined surfaces and unpainted iron and steel as necessary with suitable rust-preventive compounds.

10. Protect bearings and similar items with grease packing or oil lubrication.

11. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.

12. For storage of pipe and other products on easements and rights-of-way in residential and commercial areas, do not exceed the minimum required by scheduled laying operations, and conform to all requirements of public authorities. Store or place pipe along roads, set back from shoulder or curb, and at an angle tending to deflect vehicles if struck. Place or block pipe to preclude its accidental movement.

B. Handling

1. Provide equipment and personnel necessary to unload and handle products, by methods to prevent damage or soiling to products, or packaging.

2. Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.

3. Provide additional protection to surrounding surfaces as necessary to prevent damage.

C. Maintenance of Storage

1. Inspect stored products on a scheduled basis.

2. Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.

3. Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.

4. For mechanical and electrical Equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions on exterior of package. Service Equipment on a regularly scheduled basis.

D. Protection After Installation: Provide substantial coverings as necessary to protect installed products from damage from subsequent construction operations. Remove coverings when no longer needed or as specified.

PART 2 - PRODUCTS

2.1 Product Selection

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise specified or indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Continued Availability: Where, because of the nature of its application, Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to Owner at a later date.

4. Conform to applicable Specifications, codes, standards, and regulatory agencies.

5. Comply with size, make, type, and quality specified, or as specifically approved in writing by Engineer.

6. Manufactured and Fabricated Products:

a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.

b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.

c. Equipment and Materials shall be suitable for service conditions intended.

d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing by Engineer.

e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.

7. Do not use products for any purpose other than that for which designed.

8. To the fullest extent possible, provide products of the same kind from a single source.

PART 3 - EXECUTION

3.1 Installation of Products

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place except as required for proper movement and performance, and accurately located and aligned with other Work.

1. Obtain and distribute copies of manufacturer's printed instructions and recommendations if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to Engineer (and Resident Project Representative).

2. Maintain one complete set of instructions at the Site during installation and until completion.

3. Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Completion.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01600 ****

SECTION 01631

SUBSTITUTIONS

PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. Related Work Specified Elsewhere:

1. Requirements for submitting Contractor's Construction Schedule and the Submittal Schedule: SECTIONS 01320 and 01330.

2. Requirements governing Contractor's selection of products: SECTION 01600.

1.2 Definitions

A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

B. **Substitutions:** Changes in products, Materials, Equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:

1. Revisions to the Contract Documents requested by Owner or Engineer.

2. Specified options of products and construction methods included in the Contract Documents.

1.3 Submittals

A. **Substitution Request Submittal:** Engineer will consider written requests for substitution if received within 14 calendar days of Notice to Proceed. Requests received more than 14 calendar days

after Notice to Proceed may be considered or rejected solely at the discretion of the Owner.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for Change Order proposals. Requests for substitution shall not be submitted in the form of a Request for Information (RFI).

2. Identify the Equipment or Material, the fabrication, or installation method to be replaced in each request. Include related Specification Section/Article and Drawing numbers.

3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

a. Statement indicating why specified product or method of construction cannot be provided.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate the proposed substitution.

c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

d. Product data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Identification of available sales, maintenance, repair, and replacement services.

g. A statement indicating the effect of the substitution on Contractor's construction progress schedule compared to the schedule without approval of the

substitution. Indicate the effect of the proposed substitution on the overall Contract Times. If specified product cannot be provided within the Contract Times, provide letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delay in delivery.

h. An itemized estimate of costs that will result directly or indirectly from approval of the substitution, including:

(1) A proposal of the net change, if any, in the Contract Price.

(2) Costs of redesign required by the proposed change.

(3) Costs of resulting claims as determined in coordination with other contractors having work on the Project affected by the substitution.

i. Statement indicating whether or not incorporation or use of the substitute is subject to payment of any license fee or royalty.

j. Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents, will perform adequately the functions and achieve the results called for by the general design, is similar in substance to that specified, and is suitable for same use as that indicated and specified.

k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

4. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of the substitution within 14 calendar days of receipt of the request, or one week of receipt of additional information or

documentation, whichever is later. Acceptance, if granted, will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 Substitutions

A. Conditions: Engineer will receive and consider Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by Engineer. If the following conditions ar e not satisfied, Engineer will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.

2. Proposed substitution is in keeping with the general intent of the Contract Documents and will produce indicated results.

3. Substitution request is timely, fully documented, and properly submitted.

4. The specified product or method of construction ca nnot be provided within the Contract Times. Engineer will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

5. The requested substitution offers Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

7. The specified product or method of construction ca nnot be provided in a manner that is c ompatible with other materials

and where Contractor certifies that the substitution will overcome the incompatibility.

8. The specified product or method of construction ca nnot be coordinated with other materials and where Contractor certifies that the proposed substitution can be coordinated.

9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where Contractor certifies thatt the proposed substitution provides the required warranty.

B. Engineer's review and acceptance of Submittals shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents. Engineer's acceptance of Submittals not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval of a substitution. Acceptance by Engineer shall not relieve Contractor from responsibility for errors or omissions in the Submittals.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01631 ****

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SECTION 01780

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 Summary

A. This Section includes administrative and procedural requirements for Contract closeout including, but not limited to, the following:

1. Inspection procedures.

2. Project record document submittal.

3. Instruction book and operating manual submittal.

4. Submittal of warranties.

5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections of the Specifications.

C. Related Work Specified Elsewhere

1. Prerequisites to Contract Completion and Final Acceptance: GENERAL CONDITIONS.

2. Submittals: SECTION 01330.

1.2 Contract Completion

A. **Preliminary Procedures:** Before requesting inspection for Notice of Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Final Acceptance is claimed, show 100% completion for the portion of the Work.

a. Include supporting documentation for completion as indicated in these Contract Documents and a

statement showing an accounting of changes to the Contract Price.

b. If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete Work, and reasons the Work is not complete.

2. Advise Owner of pending insurance changeover requirements.

3. Submit specific warranties, workmanship Bonds, maintenance agreements, final certifications, and similar documents.

4. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Submit record drawings, instruction books and operating manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.

6. Deliver tools, spare parts, extra stock, and similar items.

7. Make final changeover of permanent locks and transmit keys to Owner. Advise Owner's personnel of changeover in security provisions.

8. Complete start-up testing of systems and instruction of Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the Site, along with mockups, construction tools, and similar elements.

9. Submit consent of Certificate of Completion from Contractor.

B. Inspection Procedures: On receipt of a request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled requirements. Owner will prepare the Notice of Completion following inspection or advise Contractor of construction that must be completed or corrected before the notice will be issued.

1. Engineer will repeat inspection when requested and assured by Contractor that the work is complete.

2. Results of the completed inspection will form the basis of requirements for Final Acceptance.

1.3 Final Acceptance

A. Preliminary Procedures: Before requesting final inspection for Notice of Completion of Final Acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Price.

3. Submit a certified copy of Engineer's final inspection list of items to be completed or corrected, endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Engineer.

4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the Date of Contract Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

5. Submit consent of surety to final payment.

6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

7. Submit a final liquidated damages settlement statement.

B. Reinspection Procedure: Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to Engineer.

1. Upon completion of re-inspection, Owner will prepare a Notice of Completion of Final Acceptance. If the Work is incomplete, Engineer will advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for Final Acceptance.

2. If necessary, re-inspection will be repeated.

1.4 Record Document Submittals

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for Engineer's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation. This will require an "as constructed" elevation of the manhole top and invert elevations of all pipes entering and leaving the manhole.

1. Record information concurrently with construction progress.

2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "PROJECT RECORD" in neat, large, printed letters.

3. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings.

4. Note related Change Order numbers where applicable.

5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

6. Upon completion of the Work, submit record drawings to Engineer for Owner's records.

7. Include the following:

a. Depths of various elements of foundation in relation to finish first floor datum.

b. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

c. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of construction.

d. Where Submittals are used for mark-up, record a cross-reference at corresponding location on Drawings.

e. Field changes of dimension and detail.

f. Changes made by Change Order or other Modifications.

g. Details not on original Contract Drawings.

h. As constructed information shall include a GPS coordinate of the sanitary manhole including the invert elevation of the pipes entering and leaving the manhole. The GPS level of accuracy shall be to centimeters. A registered land surveyor of the state of Arizona shall conduct the survey. This information shall be recorded on the record information set submitted to the Engineer. The information shall also be provided in an electronic format compatible with AUTOCAD release 2004.

i. Provide a record location of all service laterals where they connect to the main sewer. The separation distance between the service lateral at the crossing of a water line shall be recorded by the Contractor on his record documents.

C. Record Specifications: Maintain one complete copy of the Project Manual including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and Modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.

3. Note related record drawing information and product data.

4. Upon completion of the Work, submit record Specifications to Engineer for Owner's records.

5. Include the following:

   a. Manufacturer, trade name, catalog number, and Supplier of each product and item of Equipment actually installed, particularly optional and substitute items.

   b. Changes made by Addendum, Change Order, or other Modifications.

   c. Related Submittals.

D. **Record Product Data:** Maintain one copy of each product data Submittal. Note related Change Orders and markup of record drawings and specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Site and from the manufacturer's installation instructions and recommendations.

2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.

3. Upon completion of markup, submit complete set of record product data to Engineer for Owner's records.

E. **Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and Submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Engineer for Owner's records.

F. **Warranties and Bonds:** Specified in GENERAL CONDITIONS, Section 01330.

PART 2 - PRODUCTS - Not Applicable.

a)

PART 3 - EXECUTION

3.1 Closeout Procedures

A. **Operation and Maintenance Instructions:** Arrange for each installer of Equipment that requires regular maintenance to meet with Owner's personnel at Project Site to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Instruction books and operating manuals.

2. Record documents.

3. Tools.

4. Lubricants.

5. Fuels.

6. Identification systems.

7. Control sequences.

8. Hazards, hazardous chemicals data sheets.

9. Cleaning.

10. Warranties and bonds.

11. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating Equipment, demonstrate the following procedures:

1. Start-up.

2. Shutdown.

3. Emergency operations.

4. Noise and vibration adjustments.

5. Safety procedures.

6. Economy and efficiency adjustments.

7. Effective energy utilization.

3.2 Final Restoration

A. General: The GENERAL CONDITIONS requires general cleaning during construction.

1. Remove temporary structures, tools, equipment, supplies, and surplus materials.

2. Remove temporary protection devices and facilities, which were installed, to protect previously completed Work.

3. Restore the entire construction area to pre-construction condition.

B. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous

materials into drainage systems. Remove waste materials from the Site and dispose of lawfully.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01780 ****

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SECTION 02110

REMOVAL OF EXISTING IMPROVEMENTS

PART 1 - GENERAL

1.1 Summary

A. Description of Work

The work to be performed in accordance with this section includes the removal and disposal of various existing improvements, such as pavements, structures, pipes, curbs and gutters, and other items necessary for the accomplishment of the improvement. The work shall include the furnishing of all labor, tools, equipment, materials and the performing of all operations required to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Clearing and Grubbing.....Section 02100

1.2 Protection of Property

Protect existing improvements, adjacent property, utilities, trees, plants, or any other existing items which are not specifically intended to be removed.

1.3 Disposal

All materials shall be disposed of at an approved landfill, unless otherwise approved by the Owner.

1.4 Submittals

A. Landfill

Provide a copy of the permit to use the landfill.

B. Disposal Area

For sites other than the landfill, describe the location of the disposal area and provide written approval for the use of the area for disposing of waste from the operation. Work performed at the disposal area shall meet all local codes and ordinances.

PART 2 -MATERIALS

2.1 General

Materials required for relocation work shall be as specified herein or as otherwise indicated.

PART 3 - EXECUTION

3.1 Limits of the Work

Confine removal of existing improvements to within the area of construction. Pavement removal shall be limited to an area that is no more than the one week ahead of the projected work. At no time shall the Contractor have asphalt removed from any street longer than 60 days.

3.2 Construction Methods

A. Removal of Existing Portland Cement Concrete Sidewalks, Curb and Gutter and Pavements.

1. Saw cut concrete to neat, vertical, true lines in such a manner that the adjoining surface will not be damaged. The full depth of the existing concrete shall be saw cut.

B. Removal of Existing Asphalt Concrete Pavement

1. Saw cut asphalt concrete to neat, vertical, true lines in such a manner that the adjoining surface will not be damaged. The full depth of the existing asphalt shall be saw cut.

2. Existing asphalt concrete not used in fill areas shall be removed from the site and disposed in an approved landfill or used in a recycling operation.

3.3 Miscellaneous Removals

Perform all miscellaneous removals as required by the Owner or where indicated on the plans. The miscellaneous removals shall include but not be limited to the following tasks:

A. Relocate existing fences and gates.

B. Remove planter boxes, block walls, concrete walls and footings.

C. Remove existing irrigation systems and replace or plug.

D. Removal and relocation of signs and mailboxes. All City owned signs shall be removed from the areas of construction and delivered to the City as directed. All privately owned signs located within the areas of construction shall be removed and delivered to the property Owner or placed on the adjacent property as directed.

All mailboxes located within the areas of construction shall be removed and temporarily reset on the adjacent property for use. When grading and construction is adequately completed, the mailboxes shall be permanently reset at the back of the curb and restored to a better than or equal condition than existing.

3.4 Backfill and Densification

Backfill all holes remaining after removal of existing improvements.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No Measurement shall be made for this item.

4.2 Payment

A. Removal of Existing Improvements

If no item is listed in the bid tab or the measurement and payment section, this item is to be considered incidental.

B. Removal of Existing Improvements

Payment will be made at the contract lump sum price. This price shall be full compensation for furnishing all materials, labor, equipment, tools and appurtenances necessary to complete the work.

C. Miscellaneous Removals

All other removals shall be considered incidental to other items. No payment will be made for miscellaneous removals.

See Section 00310 Bid Schedule for Bid Items.

**** END OF SECTION 02110 ****

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SECTION 02254

SHEETING AND SHORED EXCAVATIONS

PART 1 - GENERAL

1.1 Summary

A. Work under this Section consists of furnishing, placing, maintaining and subsequently removing, to the extent required, a positive system of temporary supports for cut and cover, open cut, and trench excavations, including br acing, dewatering, and associated items to support the sides and ends of the excavations. The support system shall prevent lateral and vertical ground movements which will cause damage to buildings, structures, pavements, utilities, and any other adjacent improvements.

B. The excavations for the structures shall be made vertical and shored according to this Section. The Contractor shall construct sheeting and shoring to construct all structures and protect all existing structures, improvements, aboveground utilities, and below-ground utilities.

C. Contractor shall make his own assessment of existing conditions including adjacent property, the possible effects of his proposed temporary works and construction methods, and shall select and design such support systems, methods, and details as will assure safety to the public, adjacent property, and the completed Work.

D. The positive system of support may consist of soldier piles and lagging, sheet piling, or other methods as may be approved by Engineer; secured in place by means of bracing members which may include wales, struts, tieback anchors, or similar members. A trench box is not considered a po sitive means of support and will not be permitted.

E. Utility modification or relocation shall be performed by Contractor at no additional cost to Owner or Engineer, if existing utilities interfere with Contractor's proposed method of support.

F. Related Work Specified Elsewhere:

Earthwork .....Section 2200
Trench Excavation and Backfill .....Section 2300
Excavation, Filling, and Backfilling for Structures .....Section 2321

1.2 Quality Assurance

A. Reference Standards and Specifications:

1. American Society for Testing and Materials (ASTM):

ASTM A36/A36M - Carbon Structural Steel.

ASTM A328/A328M - Steel Sheet Piling.

2. American Welding Society (AWS):

D1.1 - Structural Welding Code, Steel.

3. American Institute of Steel Construction (AISC):

Manual of Steel Construction.

1.3 Submittals and Construction Records

A. Submittals:

1. Submit as specified in Section 1330.

2. Preliminary Shoring Report:

a. A Preliminary Shoring Report outlining the entire scope of the Contract shoring to the specified requirements shall be prepared by or under supervision of Contractor's shoring engineer. The Preliminary Shoring Report shall be submitted for Owner and Engineer review in accordance with Section 1330 prior to the commencement of any shoring work.

3. Working Drawings:

a. Working drawings, by a licensed professional engineer, shall be submitted for Owner and Engineer review in accordance with Section 1330 prior to the commencement of work on each individual item of shoring.

b. The following shall be included on the working drawings:

(1) Details, arrangement, and method of assembly of the proposed system.

(2) The method of bracing and preloading.

(3) The full excavation depth.

(4) Loads for various stages of bracing removal during concrete placement and backfilling.

(5) The anticipated lateral earth pressure, hydrostatic pressure, utility, rail, traffic, and equipment loads.

(6) The maximum design load to be carried by the various members of the support system and a tabulation of the required preloads.

(7) The depth to which the support system will be installed.

(8) The proposed sequence of strut and shore removal as applicable and as related to concrete placement and backfilling operations.

(9) Proposed monitoring plan, including location of monitoring points, inclinometers, and seismographs.

c. Complete design calculations and the maximum theoretical deflections of the support members shall be included.

d. Existing utility facilities shall be included and, after checking their locations by field investigations, the working drawings shall be revised to show the actual locations of facilities, location of excavation supports, interference with the proposed Work, and how Contractor proposes to overcome these interferences.

e. Documents provided with evidence of an Arizona State registered Professional Engineer's seal, signature, and date.

f. Welder certificates signed by Contractor certifying that welders comply with requirements under "Quality Assurance" Article.

g. Qualifications of vibration monitoring firm.

B. Construction Records:

1. The summary of monitoring data prepared by Contractor's shoring engineer shall be submitted for Owner and Engineer review on a weekly basis.

2. Results of pre-excavation survey prior to any excavation.

1.4 Qualifications

A. Contractor and his subcontracted shoring engineer shall furnish evidence of having successfully completed one project that meets the following criteria:

1. Equal or larger total linear footage of sheeting or shoring for one project of similar scope and conditions.

2. Complete within the specified contract time.

1.5 Dewatering

A. Dewatering plan shall be based on the criteria specified in Section 2300.

1.6 Protection

A. Sheeting and Shoring: Provide shoring, sheeting, and bracing as indicated or required. Meet the following requirements:

1. Prevent undermining of pavements and slabs. Remove and replace all undermined pavements, either concrete or asphalt, at Contractor's expense.

2. Excavations shall be accomplished with vertical banks wherever possible. All excavations shall remain within the property lines of the pump station as shown on the Drawings.

3. Except as otherwise specified herein, shoring and sheeting materials may be extracted and reused at Contractor's option; however, Contractor shall remove and replace any existing structure or utility damaged during shoring and sheeting. Where shoring and sheeting materials must be left in place in the completed Work to prevent settlements or damage to adjacent structures or as directed, backfill the excavation to 1 meter (3 feet) below the finished grade and remove the remaining exposed portion of the shoring before completing the backfill. If H-piles and wood lagging are used for shoring, remove wood lagging to within 1 meter (3 feet) of finished grade in incremental steps of approximately 150 mm (6 inches) as the backfill is constructed. The location of all shoring and sheeting left in place shall be documented on drawings and given to Engineer and Owner.

1.7 Quality Assurance

A. Design Criteria:

1. The design and construction of the support system, and the adequacy thereof, shall be the responsibility of Contractor. Contractor's shoring engineer shall be a professional engineer, legally authorized to practice in the jurisdiction where the Project is located, experienced in the design of earth support systems, and required to visit the Site prior to development of any sheeting and shoring system designs in order to become familiar with existing Site conditions.

2. During installation and removal of the any shoring, Contractor's shoring engineer shall visit the Site to observe the Work and to verify the compatibility of the Work with design assumptions. Contractor's shoring engineer shall prepare a status report with each visit to the Site. This report shall be submitted to Engineer within three days of each Site visit. This status report shall contain certification that the Work is in concurrence with design assumptions. If deficiencies are observed, these must be noted and the corrective action outlined in the report. In the event that deficiencies are noted in Contractor's shoring engineer's report, Contractor's shoring engineer shall return to the Site within three days after the corrective action has begun to verify that the deficiencies are adequately being corrected. A corrective action status report shall be prepared by the

Contractor's shoring engineer. The above outlined procedures shall be repeated until the corrective action status report confirms that all deficiencies have adequately been corrected.

3. Design the excavation support in accordance with the design criteria specified herein and in the Contract Documents. The criteria are intended for guidance and are the minimum acceptable.

4. Where applicable, the design and construction of the support system shall conform to the requirements of the AISC Manual of Steel Construction, unless otherwise stated.

5. Design the excavation support system and components to support lateral earth pressures, unrelieved hydrostatic pressures, utility loads, rail loads, traffic and construction loads, and building and other surcharge loads to allow the safe and expeditious construction of the permanent structures without movement or settlement of the ground, and to prevent damage to or movement of adjacent buildings, structures, utilities, and other improvements. The minimum lateral design earth pressure in all cases shall be determined by the Contractor's Shoring Engineer. All of the other above loadings shall be determined by Contractor's shoring engineer and added to the minimum design criteria. The design shall account for staged removal of bracing to suit the sequence of concrete placement for permanent structures and of backfill.

6. Design members to support the maximum loads that can occur during construction. For the purpose of this Section, the design load is the maximum load the support member will have to carry in actual practice, and the proof load is a specified test load greater than the design load.

7. Employ wales, struts, rakers, and tieback anchors for horizontal support for excavation faces retained by soldier piles and lagging, sheet piling, or other methods as may be approved by Engineer. Provide struts with intermediate vertical and horizontal supports if necessary to prevent buckling. Bracing members shall be structural steel. Tiebacks shall be high strength tendons or rods.

8. Take into account stresses due to temperature variations in the design of the struts. Make provisions to protect struts against deformations and stress variations induced by temperature fluctuations.

9. The splicing of an element of the support system will not be permitted.

10. Analyze elements supporting vertical loads and lateral pressures for combined axial load and bending.

11. Lateral loads due to soil and surcharges shall not be transmitted to the permanent structures, or portions thereof, until the concrete has reached sufficient strength to resist said loads, and then, not until the section to be loaded has been checked for strength and deflection and the method of load transmittal accepted by Engineer. The removal of struts shall not increase the design loading on the permanent structures.

12. In a bracing system where wa les are not used and a direct strut to soldier pile connection is used, consider an additional provision for bending stress due to the eccentricity of lateral loading of 10% of the depth of the member in each direction in the design of the strut member.

13. Design compression member connections for their compressive loads and for a tens ile and shearing load equal to 10% of the design compre ssive load unless tensile or shearing loads are greater.

14. Driven soldier piles may be assumed as fully braced against buckling in the plane of lagging. In the plane perpendicular to the lagging, the column length shall be taken as the distance between braced points.

15. Backfill soldier piles installed in predrilled holes with lean concrete and allow to set up prior to the start of excavation.

16. Vertical members of flexible wall systems may be designed under the assumption that they are hinged at the bottom of the pile supported excavation and at all bracing levels except the topmost level.

17. In order to satisfy a hinge condition at the bottom of excavation in soil, the vertical wall members shall have at least the minimum penetration necessary to develop the passive resistance of ground material in which piles are embedded, or cantilever action shall be assumed about the lowest installed brace.

18. The calculated deflection of any element of the support system shall not exceed 13 mm (1/2-inch) during excavation or brace removal.

19. Apply active pressure above the pile subgrade elevation to the full panel width between soldier pile centers and to the width of the soldier pile or encasement below pile subgrade. Passive pressure for calcul ation of embedment required shall be taken as acting on 1.5 times diameter for soldier piles circular in plan and 2.0 times width for soldier piles rectangular in plan.

20. To account for the concentration of soil pressures at struts and tieback locations, the bending moments taken from pressure diagrams (hydrostatic and surcharge pressures excluded) may be reduced by 20 percent when calculating flexure requirements for vert ical members and wales of flexible wall systems.

21. Where the loading conditions on opposite sides of an excavation are not equal, analyze the stability of the temporary retaining structure and design structural members so as to take this condition into account.

22. In design of vertical members and wales of flexible wall systems, basic allowable unit stresses may be increased 20%. Design bracing members and connections using basic allowable unit stresses.

23. For calculation of brace loads, vertical wall members may be assumed as several independent simple beams supported at brace levels and their continuity effects ignored. The sum of reactions at each support is used as the design brace load. The full loading on cantilevered portions shall be considered as acting directly upon the supporting brace level. An assumed strut shall be consider ed to exist at the bottom of the excavation when the mini mum pile penetration below subgrade, or deeper, is satisfied. Where wales are a part of the support system, they shall be designed according to the principles of statics.

B. Tieback Analysis and Design:

1. Investigate loading and use the most critical case for design.

2. Make a check of the overall stability (sliding, rotational, etc.) of the zone forming the anchoring mass of earth. The width of resisting surface shall be taken not greater than the distance from the support wall back to the vertical plane passing through the end of the shortest anchor. For a rotational analysis using the slip circle method the design shall yield a factor of safety of at least 1.5, based on loading and the physical properties tabulated.

3. For purposes of determining the effective length of anchors, take the failure plane of the soil mass behind the wall at a minimum angle of 45 degrees measured from the vertical. Anchors shall be considered as receiving resistance from only the soil mass acting beyond the indicated failure plane. Consideration shall be given to increased extent of the failure zone due to high surcharge loads.

4. For loading combinations found, determine the allowable value of adhesion between the soil and the anchor for design of effective embedded length of each individual anchor in various strata. The effective length thus found shall be increased by at least 10% to make allowance for unforeseen field variables.

5. The angle between the direction of the anchor and the horizontal line perpendicular to the support of excavation wall shall be chosen by the Contractor within a range of 0 degrees to 30 degrees. Account shall be taken of the effects of resulting vertical components and associated structural implications arising therefrom, particularly regarding toe penetration requirements.

6. Install anchors in predrilled holes and pressure grout to ensure firm contact with the surrounding soil.

7. For drilled-in anchors, the total anchor load shall be developed in bond between steel and grout acting within effective length of the anchorage.

8. The final working stress shall not exceed 60% of the ultimate tensile strength of the steel nor 70% of its yield strength loads where high-strength tie rod steel is used.

9. For tieback anchors of high st rength steel, a pretest load of at least 140% of working load shall be applied. The load shall then be relaxed to not less than 100% of the working load. Final pretest stress in the steel is not to exceed 80% of the ultimate strength nor the manufacturer's recommendations as shown in his catalog or otherwise stated by him in writing.

10. Spacing of the tiebacks shall ensure no overlap of resisting soil stress bulbs in assuming full value of anchorage for each tieback. In the event of overlap, then a reduction factor shall be used for ties effected. In any one plane the anchors shall have a minimum clear distance between them of 1.5 meters (5 feet). Tiebacks having overlapping soil stress bulbs shall be pretested simultaneously.

11. Use good engineering practice, a knowledge of the local or regional subsurface conditions , available geotechnical or subsurface information, and studies performed by the Contractor to investigate the subsurface conditions at the Site in the analysis and design of tieback systems.

12. The value of overburden pressure, if used for adhesion calculations, shall not include surcharge loads.

13. Tiebacks shall not be placed closer than 3 meters (10 feet) to foundation structures of existing buildings.

C. Monitoring:

1. Pre-excavation Survey:

a. Contractor shall document all existing damage to adjacent facilities and submit the information to the Owner prior to performing any excavation. Documentation shall include a written description, diagrams, measurements, and photographs as appropriate.

b. Establish lines of monitoring points, perpendicular to the excavation face, for at least two sides of each excavation where monitoring is required. Space the lines of monitoring points no more th an 6 meters (20 feet) apart, and a minimum of three lines shall be established for each

excavation side to be moni tored. Each monitoring line shall consist of a minimum of four monitoring points spaced no more than 3 meters (10 feet) apart. Locate the first monitoring point in each line at the top of the braced excavation. The monitoring lines shall extend from the excavation face to a distance equivalent to twice the total excavation depth. The base of each monitoring point monument shall extend to a depth of at least 1.5 meters (5 feet) below the ground surface. Establish surface monitoring points prior to beginning an excavation.

c. Each survey reading shall consist of measuring the vertical and horizontal location of each monitoring point. Make the initial set of readings prior to the start of the excavation. Make each additional set of readings at each 1.5-meter (5-foot) increment of vertical excavation depth, immediately before and immediately after in ternal bracing or tiebacks are installed. After the excavation has been completed, take readings at 7-day intervals thereafter and until movements have been determined by Contractor's shoring engineer to have ceased. If portions of the bracing system are removed at any time, make readings immediately prior to removal and immediately after removal.

d. Contractor's shoring engineer shall reduce and review the monitoring data and submit a summary of the data to Engineer on a weekly basis. As a minimum, this summary shall include graphical plots of the monitoring data and Contractor's shoring engineer's interpretation thereof.

D. Work Site Conditions:

1. Provision for Contingencies:

a. Monitor the performance of the components of the support system for both vertical and horizontal movement at regular intervals not to exceed three days.

b. Provide a contingency plan or alternative procedure for implementation if unfavorable performance is evident.

c. Keep the materials and equipment necessary to implement the contingency plan on hand.

2. Employ caution in the areas of utility facilities, which shall be exposed by hand or other excavation methods acceptable to Owner.

E. Welding Standards:

1. Comply with applicable provisions of AWS D1.1.

2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved, and if pertinent, has undergone recertification.

PART 2 - MATERIALS

2.1 Structural Steel: Steel H-piles, WF shapes, bracing members, fabricated connections, and all other accessories shall conform to the requirements of ASTM A36.

2.2 Structural Steel Sheet Piles

A. Steel sheet piling shall conform to the requirements of ASTM A328.

B. Steel sheet piling and interlocks shall not have excessive kinks, camber, or twists that would prevent the pile from free sliding.

2.3 Reinforcing Steel: Shall conform to the requirements of Section 3200.

2.4 Field Welding: Shall be performed by certified welders and be in accordance with AWS D1.1.

2.5 Tiebacks: Shall be high strength steel tendons or rods encased in concrete grout. Use of helical screw anchors is strictly prohibited.

2.6 Concrete

A. Lean grout shall be a mixture of Type V cement, sand, and fly ash in the proportions of one bag cement, 5 cubic feet fly ash, and sufficient aggregate and mix water to yield 27 cubic feet and shall be placed in such a manner as to present a firm, stable mass capable of retaining shape and position during excavation operations, yet allow relative ease in chipping out for placement of lagging.

B. All other concrete shall conform to the requirements of Section 03300.

2.7 Timber Lagging: Shall be of a structural grade providing a minimum allowable working stress of 7.6 MPa (1,100 psi) where a system of timber lagging is to be used to support earth excavation.

2.8 Other Materials: Shall be of the size, shape and properties best fitted for their intended use.

2.9 Materials: Whether new or used, shall be sound and free of defects that might impair strength or function.

PART 3 - EXECUTION

3.1 Soldier Piles Installation

A. In the initial positioning of soldier piles at the ground surface, make allowances for installation devi ations, and the probable inward movements of the support wall during excavation. Intrusion of wall members into the neat lines of the structures will not be permitted. Where sheeting systems are located contiguous to the neat lines of the structure, provide a reasonable percentage of the depth of excavation to subgrade for initial installation offset.

B. Install soldier piles by preboring or other preexcavating methods to tip elevation shown on the approved working drawings.

C. Case or fill the prebored holes with drill mud, as required, to prevent caving of the sides of the hole prior to placement of the soldier pile and encasement.

D. Pile Embedment:

1. Carry the bottom of the support system to a depth below the main excavation to provide sufficient lateral support to limit the maximum pile deflection to 13 mm (0.5-inch).

E. After seating the soldier piles, encase the piles with lean grout, completely encasing the pile.

F. Design of soldier piles shall conform to the criteria specified in PART 1 - QUALITY ASSURANCE, this Section.

G. Vertical Support System with Tiebacks:

1. Install piles or other vertical support system members incorporated in a system using tieback anchors so that

vertical support members are capable of resisting vertical components of tieback loads without significant settlement during excavation and construction.

2. Install the vertical support members so that settlements will not be caused by construction. In general, install the members to be end bearing in a stratum below the maximum depth of excavation and capable of carrying the total vertical loads without assistance of skin friction in the depth of the excavation.

3.2 Lagging and Sheeting Installation:

A. Use timber lagging or contact sheeting, steel sheeting, or precast reinforced concrete members secured in place for sheeting of excavations.

B. Install sheeting and lagging with no gap between the boards. Carefully perform excavation for the installation of sheeting and lagging to minimize or eliminate the formation of voids behind the lagging. As installation progresses, backfill voids between the excavation face and the lagging or sheeting with sand or soil compacted in place. Pack gaps in lagging with materials such as hay or burlap to allow drainage of groundwater without substantial loss of soil.

C. If unstable material is encountered, take measures to retain the material in place or to otherwise prevent soil displacement.

D. Sheeting and lagging placement shall follow the excavation. The maximum height of the unsheeted or unlagged face of excavation shall be determined by the job conditions, but in no case shall it exceed at anytime 1.2 meters (4 feet) in predominately clayey soils or 1 meter (3 feet) in sandy soils. If water flows from the face of the excavation, or soil in the face moves toward the excavated area, the maximum height of the unlagged face shall not exceed 375 mm (15 inches), or as directed by Resident Project Representative.

E. Sheet piling not cut to length shall be cut off after driving at elevations as indicated, if applicable.

F. Drive sheet piling by recognized methods of good practice in soil conditions present using a hammer with sufficient energy to penetrate overburden material without damaging the sheet piling or adjacent existing facilities. Avoid splicing of sheet piling when

possible. Z-pile sections shall be driven with ball edge "ahead."

G. Provide protection to sheet pile en ds, as required, to ease driving, assure penetration and prevent tearing or splitting in hard driving conditions.

H. In running sand or silt, provide a positive means of securing the lagging to the soldier piles to avoid shifting or falling off of the lagging. Also provide a positive means of securing the material behind the lagging or sheeting.

I. A sufficient quantity of material shall be on hand at all times (for sheeting, shoring, bracing and other purposes) for the safe execution of the work and for use in case of accident or other emergency.

J. Place wales, when used, on the inside face of the support wall. Make provisions to wedge, pack, shim, or otherwise assure tight bearing between wales and soldier piles, with ample bearing area to assure transfer of the load.

K. Remove lean grout only to the extent that is required for installation of the lagging.

3.3 Internal Bracing Support Systems Installation

A. The internal bracing support syst em includes lagging and sheeting, soldier piles, wales, struts, and shores.

B. Brace as soon as possible after eaching prescribed excavation levels.

C. Provide struts with intermediate bracing if necessary, to enable them to carry the maximum design load without distortion or buckling.

D. Provide diagonal bracing where needed to maintain the stability of the system.

E. Include web stiffeners, plates, or angles to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities due to field fabrication and assembly.

F. Install bracing support members an d maintain in tight contact with

each other and with the surface being supported. Install support system instrumentation if directed by Owner or Engineer.

G. Coordinate excavation work with installation of bracing and preloading.

H. Design primary support members to support the maximum loads occurring during the excavation or removal stages, and as required by design criteria specified under PART 1 - QUALITY ASSURANCE, this Section, and on the Contract Drawings.

I. Preloading:

1. Primary bracing members including struts, shores, and similar members shall be preloaded at installation. The amount of the preload shall be determined by Contractor's shoring engineer. Tiebacks sh all be preloaded as specified for those installations.

2. Use procedures that produce uniform loading of the bracing member without appreciable eccen tricities, or overstressing and distortion of the members of the wall system.

3. Make provisions for permanently fixing the required load in the member using steel shims or wedges welded into place.

4. Wooden wedges shall not be used to preload a bracing member.

5. The preloading system shall include a means to determine within 5% the amount of preload induced into the bracing members.

J. Excavation shall not go deeper than 1 meter (3 feet) below the point of support about to be placed. Install the support and preload immediately after installation of bracing and prior to continuing excavation.

3.4 Tieback Support Systems Installation

A. If Contractor elects to use a suppo rt system which includes tieback anchors, he shall submit full details of his proposed system to the Engineer for review prior to commencement of the work. The submittal shall be in accordance wi th instructions specified under PART 1 - SUBMITTALS, this Section. Design shall be in accordance with tieback criteria specified under PART 1 - QUALITY

ASSURANCE, this Section.

B. Install tieback systems in accordance with the working drawings. Install the anchorage in soil no closer than a plane extending upward at an angle of 45 degrees to the horizontal from the limit of the lowest depth of excavation.

C. Stress all the tiebacks to proof loads equal to 120% of the maximum design load. Maintain the proof load for 30 minutes prior to reducing it to the design load. Anchors which lose more than 5% of the proof load during the 30-minute period will not be acceptable.

D. During proof testing, load in increments of 4.5 metric tons (5 tons) at one-minute intervals providing means to measure the load application within an accuracy of plus or minus 5%. Record axial movement corresponding to incremental applications of load to an accuracy of 0.25 mm (0.01-inch).

E. After reducing the tieback load to the design load, encase tiebacks in grout. Maintain the design load until the tiebacks are fixed in place.

F. Use a method of fixation which will limit the load loss to no more than 5% of the design load in the transfer of the loads from the jacks to the support system.

G. Provide and maintain convenient access and appropriate means so that these observations may be made.

H. Grease and wrap drilled-in anchors or otherwise treat to ensure the absence of bond on the portion ofthe tieback between the face of wall and the anchorage.

I. Performance Tests on Tiebacks:

1. Conduct performance tests on at least three selected tiebacks prior to installing any of the remaining tiebacks, which will all be proof loaded. Test tiebacks at each level of support in the excavation. A minimum of 10% of the tiebacks installed shall be performance tested. All performance tests shall be measured with a load cell accurate to within 1% of the design load.

2. Performance tests for tiebacks in cohesionless soils shall consist of the following cyclic loadings: 0 tons to 0.25 DL

(Design Load); 0.25 DL to 2 tons; 2 tons to 0.50 DL; 0.50 DL to 2 tons; 2 tons to 0.75 DL; 0.75 DL to 2 tons; 2 tons to 1.0 DL; 1.0 DL to 2 tons; 2 tons to 1.2 DL; 1.2 DL to 2 tons; 2 tons to 1.33 DL. The load shall then be reduced to 100% of the design load and locked off. Record axial movement corresponding to incremental applications of 25% of the design load for each individual cycle of loading to an accuracy of 0.025 mm (0.001-inch).

3. Performance tests for tiebacks in cohesive soils shall consist of the following cyclic loadings: 0 tons to 0.25 DL (Design Load); 0.25 DL to 1.8 m tons (2 tons); 1.8 m tons (2 tons) to 0.50 DL; 0.50 DL to 1.8 m tons (2 tons); 1.8 m tons (2 tons) to 0.75 DL; 0.75 DL to 1.8 m tons (2 tons); 1.8 m tons (2 tons) to 1.0 DL; 1.0 DL to 1.8 m tons (2 tons); 1.8 m tons (2 tons) to 1.2 DL; 1.2 DL to 1.8 m tons (2 tons); 1.8 m tons (2 tons) to 1.33 DL. The load shall then be reduced to 100% of the design load and maintained continuously for a minimum of 10 hours. Measure axial movements to an accuracy of 0.025 mm (0.001 inch) and record on 5-minute intervals for the first 100 minutes and 10-minute intervals thereafter.

4. The data from all performance tests shall be interpreted by Contractor's shoring engineer. This interpretation will constitute an evaluation of anchor allowable load-carrying capacities and shall be used by Contractor's shoring engineer to set a criteria for allowable movement of the proof tests.

3.5 Trench Excavation

A. Perform sheeting, shoring, and bracing for trench excavation for utility facilities and other purposes in accordance with the safety requirements of the General Conditions.

B. Provide sheeting, shoring, and bracing for trench excavation in the subgrade of the excavation to prevent movement of the main excavation support system.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No measurement will be made for this item.

4.2 Payment

A. Sheeting and Shored Excavations

Payment for Sheeting and Shored Excavations is included in the lump sum price for the appropriate precast concrete structure(s) included in this project.

**** END OF SECTION 2254 ****

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SECTION 2300

TRENCH EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.1 Description

A. Description of Work

The work to be performed in accordance with this section includes the excavation, trenching, backfilling and surface repair for all pipelines, pipe culverts, box culverts, accessories and lines connected thereto, complete including sheeting and shoring, dewatering, grading and cleanup.

Excavation for appurtenant structures such as manholes, inlets, transition structures, junction structures, vaults, valve boxes, catch basins, etc. shall be included in this section.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all operations to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Earthwork..... Section 2200
Storm Drain Construction ..... Section 2500
Concrete Culverts..... Section 2520
Water Line Construction ..... Section 2550
Sewer Line Construction ..... Section 2560
Manhole Construction..... Section 2570

C. Definitions

1. Trench

An excavation in which the depth is greater than the width of the bottom of the trench.

2. Foundation

Material on which bedding is to be directly placed.

3. Bedding

Granular material on which pipe or structure is to be directly placed. The bedding extends from 6 inches below the pipe to 12 inches above the top of the pipe.

4. Select Backfill

Material placed from top of the bedding to finished subgrade.

1.2 Quality Assurance

A. Reference Test Standards and Specifications

ASTM C94, Ready Mix Concrete.

ASTM C117, Standard Test Method for Materials Finer than No. 200 Sieve by Washing.

ASTM C131, Standard Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

ASTM D1556, Density of Soil in Place by the Sand-Cone Method.

ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

ASTM D6938-08a, Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D6938-08a, Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D4215, Standard Specification for Cold Mixed, Cold Laid Bituminous Paving Mixture.

ASTM D4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

Rock Correction Procedure for Maximum Density Determination, ARIZ 227.

B. Frequency of Testing

1. Maximum Dry Density and Optimum Moisture Content, ASTM D698.

a. One test for each different class or type of material shall be provided by the **CONTRACTOR**.

b. **CONTRACTOR** shall provide additional test when previous test is suspect, due to subtle changes in the material, as determined by the **OWNER**.

2. Density of Soil In-Place by Sand Cone or by Nuclear Methods

a. **OWNER** will perform a minimum of one test per lift per 500 linear feet of trench for each type of material.

b. **OWNER** will perform additional tests as required to ensure proper compaction.

C. Testing Tolerances

1. Percent Relative Compaction

Not less than as specified on plans or in these specifications.

2. In-Place Moisture Content

As required to achieve specified percent relative compaction.

3. Soft or Yielding Surfaces

Regardless of percent relative compaction obtained by test, areas which are soft and yield under the load of construction equipment are to be removed and replaced at no additional cost.

1.3 Submittals

A. Materials Test Reports

1. Report on maximum dry density and optimum moisture content prior to beginning of construction.

2. Report on bedding and backfill materials compliance tests as required.

B. Spoil Disposal Area

Provide location and written approval for area to dispose of spoil from operation.

C. Shoring Plan

Provide plans, details and calculations by a professional **ENGINEER** registered in the appropriate jurisdiction if shoring or sheeting is required.

D. Dewatering Plan

Not required.

1.4 Job Conditions

A. Dewatering

It is the **CONTRACTOR'S** responsibility to dewater if groundwater is encountered.

B. Protection of Existing Utilities

Maintain all utilities both underground and overhead in continuous service throughout the contract period. Liability for damages to, or interruption of services caused by the construction shall be borne by the **CONTRACTOR**.

PART 2 - MATERIALS

2.1 Soil and Soil Aggregate Materials

A. Unsuitable materials not to be incorporated in the work include:

1. Organic matter such as peat, mulch, organic silt or sod.
2. Soils containing expansive clays.
3. Material containing excessive moisture.
4. Poorly graded coarse material.
5. Particle size in excess of 6-inches.
6. Material which will not achieve density and/or bearing requirements.
7. Material containing asphalt concrete or Portland cement concrete.

B. Bedding

Bedding for all water, sewer, storm drain lines, and manholes specified in Sections 2500, 2550, 2560 and 2570 shall be bedded in bedding sand. Concrete culverts, specified in Section 2520, shall be bedded on aggregate base.

1. Bedding Sand

Sandy material, non-plastic and shall conform to the following:

SIEVE SIZES	PERCENTAGE BY WEIGHT PASSING SIEVE
3/8"	100
No. 4	90-100
No. 50	10-40
No. 100	3-20
No. 200	0-15

2. Aggregate Base

Crushed aggregate or processed natural material, clean, hard, sound and free of any detrimental quantity of soft, friable elongated or laminated pieces, organic matter or other deleterious substances. Properties of which shall meet the following requirement:

a. Grading, ASTM C136 and ASTM C117.

Sieve Size	Percent by Weight Passing
1 1/8"	100
No. 4	38-65
No. 8	25-60
No. 30	10-40
No. 200	3-12

b. Percentage of Wear, ASTM C131, maximum percentage of wear of 40 after 500 revolutions.

c. Plasticity Index and Liquid Limit, ASTM D4318, maximum plasticity index of 5, maximum liquid limit of 25 percent.

C. Select Backfill

Native excavated granular material or approved import material free from unsuitable materials defined herein. Aggregate base may be used as backfill material.

D. Granular Backfill

Native excavated or approved import granular material, free draining and free of unsuitable materials defined herein. Granular backfill shall be non-plastic, well graded and meet the following gradation:

Sieve Size	Percent by Weight Passing
1 1/2 inches	100%
No. 200	0-15

2.2 Portland Cement Concrete

ASTM C94 and Specification Section 3300.

2.3 Asphalt Cement Concrete

As required in Specification Section 2630.

2.4 Cold Mix, Cold Laid Bituminous Paving Mixture

ASTM D4215.

2.5 Buried Warning and Identification Tape

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for locating, warning, and identification of buried utility lines. Provide tape on rolls, 3-inch minimum width, color coded as stated below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing is to be permanent, unaffected by moisture or soil.

WARNING TAPE COLOR CODES	
RED	ELECTRIC
YELLOW	GAS, OIL, DANGEROUS MATERIALS
ORANGE	TELEPHONE AND OTHER COMMUNICATIONS
BLUE	WATER SYSTEMS
GREEN	SEWER SYSTEMS
WHITE	STEAM SYSTEMS

A. Warning Tape for Metallic Piping

Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements indicated above. Minimum thickness of the tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise with a maximum 350 percent elongation.

B. Detectable Warning Tape for Non-Metallic Piping

Polyethylene plastic tape to the width, color, and printing

requirements indicated above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

Verify that all of the preliminary work including construction staking has been performed in accordance with the plans and specifications prior to trenching and backfill operations.

3.2 Trenching in Fill Areas

Grade fill areas to within 1 foot of the finish grade prior to trenching and placement of the pipeline.

3.3 Excavation

A. General

Perform all excavations of every description and of whatever substances encountered to the depths indicated on the plans and including excavation ordered by the **OWNER** of compacted fill for the purpose of performing tests. Use open cut excavation methods unless otherwise indicated on the plans or approved by the **OWNER**.

B. Trench Widths

Excavate trenches for pipe to the following dimensions:

SIZE OF PIPE (I.D.)	MAXIMUM WIDTH AT TOP OF PIPE GREATER THAN O.D. OF PIPE	MINIMUM WIDTH AT SPRINGLINE EACH SIDE OF PIPE
Less than 18"	16"	6"
18" to 24" inclusive	19"	7 ½"
27" to 39" inclusive	22"	9"
42" to 60" inclusive	½ O.D.	12"
over 60"	36"	12"

Maintain trench walls as vertical as possible except as required by safety standards and as required for sheeting and shoring.

If the maximum trench width is exceeded at the top of the pipe, the **CONTRACTOR** shall provide necessary additional load bearing capacity by means approved by the **OWNER** at no additional cost to the **OWNER**.

C. Overexcavation

1. Unauthorized Overexcavation

Fill and compact unauthorized excavation beyond the specified grade line, at the **CONTRACTOR'S** expense, with bedding material, compact to 95 percent of the maximum density. No payment will be made for unauthorized overexcavation.

2. Rock

Overexcavate rock encountered in the trench to provide a minimum of six inches of bedding below the pipe and the minimum width at the springline.

3. Unsuitable Material

Overexcavate unsuitable material to the depth necessary to provide the required support as determined by the **OWNER**. Backfill the overexcavation with bedding material and compact to at least 95 percent of the maximum density.

D. Excavation for Manholes, Valves, Inlets, Catch Basins and Other Accessories

Provided the excavated surfaces are firm and unyielding, the **CONTRACTOR** may elect to cast concrete for the structure directly against excavated surfaces. Overexcavate to provide bedding where shown on the plans.

E. Pavement and Concrete Cutting and Removal

Sawcut, remove and dispose of existing pavements and concrete per Specification Section 2110.

F. Grading and Stockpiling

1. Grading

Grade in the vicinity of the trench to prevent surface water from flowing into the trench. Remove any water accumulated in the trench by pumping or by other approved methods. Stockpile excavated material in an orderly manner a sufficient distance back from the edges of the trench to avoid overloading and to prevent slides or cave-ins.

2. Topsoil

Excavate topsoil and stockpile separately. Replace topsoil upon completion of backfill and grade to the elevations indicated on the plans.

G. Shoring and Sheeting

Shore, sheet and brace excavations as set forth in the rules, orders and regulations of the United States Department of Labor Occupational Health and Safety Administration (OSHA). Provide detailed plan and calculations as prepared by a registered professional **ENGINEER** for excavations 20 feet in depth or greater or when

shoring, sheeting or bracing deviates from OSHA standards. Place and remove shoring, sheeting and bracing so as not to damage adjacent improvements, utilities or utility being placed. Costs for shoring, sheeting and bracing to be incidental to the pipe item.

H. Open Trench

1. Maximum Length

The maximum length of open trench at any one location is not to exceed 500 feet, provided that all proper barricades and safety procedures have been addressed. The trench is considered to be open until backfill is completed to adjacent finish grade elevation.

2. Street Crossing

Complete backfill of trench across streets at the end of each work day. Use temporary patch material (cold mix asphalt concrete) or steel plates as required.

3. Temporary Provisions

Furnish and install trench bracing and steel plating required to provide safe and convenient vehicular and pedestrian passage across trenches where required. Maintain access to and from emergency facilities at all times.

3.4 Foundation, Bedding, Backfilling and Compaction

A. Foundation

Excavate trench bottom to the depth and width as shown. Remove all loose, disturbed material from the bottom of the trench such that the bedding shall rest on firm, undisturbed soil.

B. Bedding

Moisture condition and place bedding material to required thickness. Compact bedding material to the specified density.

C. Fine Grading

Accurately grade the bottom of the trench to provide uniform bearing

and support for each section of pipe at every point along its entire length, except where it is necessary to excavate for joints.

D. Moisture Conditioning

Moisture condition all bedding and backfill materials by aerating or wetting to obtain the moisture content required to achieve specified percent relative compaction. Completely mix the material until the moisture content is uniform throughout the lift.

E. Lift Thickness

1. The following table applies when using mechanical compaction:

LIFT DESCRIPTION	MAXIMUM LOOSE LIFT THICKNESS, INCHES
Initial Bedding	8
Bedding	1/3 Pipe Diameter, or 8 inches, whichever is less
Backfill	8
Aggregate Base Surfacing	6

Lift thickness may be increased if **CONTRACTOR** can prove, through a series of density tests, that minimum density is achieved throughout the lift thickness.

2. Where water jetting is used, bedding for conduits, 24 inches or less in I.D., may be placed in one lift. For larger conduits the first lift shall not exceed the springline of the pipe. Backfill will be placed in lifts as required in the following table prior to settlement.

TRENCH WIDTH	BACKFILL LIFTS
18" to 24"	Not to exceed 4'
25" to 36"	Not to exceed 6'
Over 36"	Not to exceed 8'

F. Compaction

1. Compaction Methods

Construction shall be accomplished by water jetting or mechanical methods. Rubber tire wheel rolling will not be allowed.

2. Pipe Haunch

When using mechanical methods, hand compact initial backfill in pipe haunch with a pipe haunch compactor (J-bar) or mechanical vibrator sized to fit the narrow width between the pipe and the trench. Give special attention to provide proper compactive effort in the pipe haunch zone.

3. Water Jetting

Water consolidation by jetting shall be accomplished with a 1-1/2" pipe of sufficient length to reach the bottom of the lift being settled with adequate hose attached and a water pressure of not less than 30 psi. All jetting shall be accomplished transversely across the trench at intervals of not more than 6 feet with the jetting locations on one side of the trench offset to the jetting locations on the other side of the trench. The entire lift shall be leveled and completely saturated working from the top to the bottom.

The **CONTRACTOR** shall be entirely responsible for establishing each lift depth so as to avoid floating the conduit being placed and shall make any repair or replacement at no cost to the **OWNER**. However, for conduit larger than 24 inches I.D., the first lift shall not exceed the springline of the conduit.

Flooding is not acceptable as a water consolidation method unless authorized in the specification or by a written change order. It will consist of the inundation of the entire lift with water and then puddled with poles or bars to ensure saturation of the entire lift.

Where jetting or flooding is utilized and the surrounding material is such that it does not permit proper drainage, the **CONTRACTOR** shall provide, at his expense a sump and a pump at the downstream end to remove the accumulated water.

The use of water consolidation does not relieve the **CONTRACTOR** from the responsibility to make his own determination that such methods will not result in damage to existing improvements. The **CONTRACTOR** shall be responsible for any damage incurred.

Where water consolidation is not permitted or does not result in adequate compaction, the backfill material shall be compacted with hand and/or mechanical work methods using equipment such as rollers, pneumatic tamps, hydro-hammers or other approved devices which secure uniform and required density without injury to the pipe or related structures.

Water consolidation will not be permitted for non-granular material.

4. Compaction Densities

Thoroughly compact trench bedding and backfill to not less than the percent relative compaction as presented in the following table, unless more stringent requirements are called for on the plans.

PERCENT RELATIVE COMPACTION MINIMUM DENSITY REQUIRED				
Backfill Type	**Location**	**From Subgrade Surface To 2' Below Surface**	**From 2' Below Surface To 1' Above Top of Pipe**	**From 1' Above Top of Pipe To Bottom of Trench**
I	Under any existing or proposed pavement, curb, gutter, sidewalk, or such construction included in the contract or when any part of the trench excavation is within 2' of the above.	100% for granular 95% for non-granular	95%	95%
II	On any utility easement, street, road or alley right-of-way out-side of (I).	95%	95%	95%
III	Around any structures or exposed utilities.	95% in all cases		

3.5 Buried Warning and Identification Tape

Place warning and identification tape to the depth indicated on the plan. Center tape over pipeline.

3.6 Backfill for Manholes, Valves, Inlets, Catch Basins and Other Accessories

Backfill appurtenances and structures including bedding, backfill, lift thicknesses and compaction as indicated in the adjacent trench detail.

3.7 Pavement Replacement and Surface Restoration

A. Grading

Perform all grading adjacent to backfilled trenches and structures necessary to leave the area in a neat and satisfactory condition as approved by the **OWNER**.

B. Surface Restoration

Restore all streets, alleys, driveways, sidewalks, curbs or other surfaces which were broken into or damaged by the installation of the new work to a condition as good as or better than originally encountered in accordance with these specifications, accepted standards and as acceptable to the property **OWNER**.

1. Landscape

Replace landscape rock, sod, shrubs, trees, grass, sprinkler systems as required to a condition as good as or better than originally encountered in accordance with these specifications, accepted standards and as acceptable to the property **OWNER**.

2. Temporary Pavement

Place cold mix, cold laid bituminous paving mixture in accordance with ASTM D4215 immediately following backfilling and compaction of trenches through existing pavement. Maintain pavement in safe and smooth condition until final pavement can be placed. Place final pavement within seven (7) days after original pavement was removed.

3. Pavement Replacement

Replace permanent asphalt cement, concrete pavement per the requirements of Specification Section 2630, Asphalt Concrete Pavement.

4. Clean Up

Remove all excess soil, concrete, etc. from the premises. Leave job site in a neat and clean condition.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

A. Trench Excavation and Backfill

No measurement will be made for trench excavation and backfill.

B. Overexcavation

Overexcavation of unsuitable material will be measured by the average end area method per Section 2200, Earthwork.

C. Surface Repair

Measure surface repair along the centerline of utility over which it occurs from junction center to center.

4.2 Payment

A. Trench Excavation and Backfill

No payment will be made for trench excavation and backfill. All trench excavation and backfill work including but not limited to excavation, material testing, disposal, backfill grading is incidental to the pipelines and appurtenant bid items.

B. Overexcavation

Payment for overexcavation will be made per Specification Section 2200, Earthwork.

C. Asphalt Concrete, Trench Surface Repair

All costs for furnishing and installing asphalt concrete trench surface repair including Aggregate Base, tack coat for edges, subgrade preparation, compaction will be included in the unit price bid per linear foot for **ASPHALT CONCRETE TRENCH SURFACE REPAIR**. The unit price shall be considered as full payment for constructing the

pavement repair section as required including placement of base aggregate and pavement. No compensation shall be made for pavement repair required due to pavement damage caused during pipe installation. The length of surface repair will be measured along the centerline of the pipe from pavement edge to pavement edge.

Any additional pavement patching required for removal of existing structures, location of lines, or any damage done by the **CONTRACTOR** shall be considered incidental to the appropriate Bid Items.

See Section 00310 Bid Schedule for Bid Items.

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SECTION 02321

EXCAVATION, FILLING, AND BACKFILLING FOR STRUCTURES

PART 1 - GENERAL

1.1 Summary

A. This Section includes all necessary excavation, filling, and backfilling for structures and all related Work, including duct banks and manholes.

B. Related Work Specified Elsewhere

Trench Excavation and Backfill.....Section 02300
Concrete.....DIVISION 3

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American Society for Testing and Materials (ASTM)

ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

ASTM D4253 - Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

ASTM D4254 - Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

2. Occupational Safety and Health Administration (OSHA)

Part 1926 - Safety and Health Regulations for Construction.

1.3 Submittals

A. Submit as specified in Section 01330.

B. Where selecting an option for excavation, trenching, and shoring in compliance with local, state, or federal safety regulations such as "OSHA Part 1926" or successor regulations, which require design by

a registered professional engineer, submit (for information only and not for Engineer approval) the following:

1. Copies of design calculations and notes for sloping, benching, support systems, shield systems, and other protective systems prepared by or under the supervision of a professional engineer legally authorized to practice in the jurisdiction where the Project is located.

2. Documents provided with evidence of registered professional engineer's seal, signature, and date in accordance with appropriate state licensing requirements.

PART 2 - MATERIALS

2.1 Fill and Backfill Material

A. Earth Backfill:

Use suitable material as specified in SECTION 02300, PART 2 for granular backfill.

B. Granular Fill:

Native excavated or approved import granular material, free draining and free of unsuitable materials defined herein. Granular backfill shall be non-plastic, well graded and meet the following gradation:

Sieve Size	Percent by Weight Passing
¾ inches	100
No. 4	40 - 85
No. 8	30 - 75
No. 40	10 - 50
No. 100	5 - 20
No. 200	3 - 12

2.2 Concrete

A. Includes all concrete used to restore bottom of excavation to proper elevation, and in concrete seal coats.

B. Concrete shall be as specified in DIVISION 3.

PART 3 - EXECUTION

3.1 Excavation

A. Perform as specified in Section 02300 and as follows:

1. Excavate area adequate to permit efficient erection and removal of forms.

2. Trim to neat lines where details call for concrete to be deposited against earth.

3. Excavate by hand in areas where space and access will not permit use of machines.

4. Notify Engineer immediately when excavation has reached the depth indicated. Do not proceed further until approved.

5. Restore bottom of excavation to proper elevation with compacted fill in areas overexcavated, as approved.

6. Top with 75-mm (3-inch) concrete seal coat if required to provide satisfactory subgrade for structural base slabs:

a. Seal coat shall conform to applicable requirements of DIVISION 3.

7. Use sides of trenches to form sides of duct banks where possible and where sides of trench are vertical, stable, and excavated to the proper line.

B. Sheeting and Shoring:

1. Sheeting and Shoring shall be provided when soil conditions indicate the need for sheeting and shoring.

2. Damages:

a. Repair all damage resulting from Contractor's excavation and remove and replace all undermined pavements with Owner-approved equal, either concrete or asphalt, at Contractor's expense and in accordance with Section 02630.

3.2 Filling and Backfilling

A. Granular Fill:

1. Place on prepared subgrade where indicated, prior to placing concrete in slabs on grade.

2. Lifts shall not exceed 150 mm (6 inches) in loose-layer thickness.

3. Compact to 95% relative density as referenced to ASTM D4253 and D4254.

B. Earth Backfill:

1. Backfill only after concrete has attained 70% design strength.

2. Backfill adjacent to structures only after, in the opinion of Engineer, a sufficient portion of the structure has been built to resist the imposed load.

3. Remove all debris from excavation prior to placement of material.

4. The slope bounding the excavation, if steeper than 6 horizontal: 1 vertical, shall be stepped or serrated prior to placing the backfill material.

5. Perform backfilling simultaneously on all sides of structures.

6. Place backfill in level layers not exceeding 100 to 200 mm (4 to 8 inches) in loose-layer thickness.

7. Exercise extreme care in the use of heavy equipment in areas adjacent to structures.

8. Compact to 95% of maximum dry density within the moisture content range from 2% below optimum to 2% above optimum. Optimum moisture and maximum dry density shall be determined by ASTM D1557. Accomplish without inundation or flooding.

3.3 Field Quality Assurance

A. Compaction:

1. Contractor shall, through services of an independent laboratory, test all filling and backfilling for structures to determine conformance with density relationships specified.

2. Method of test shall be as specified in SECTION 02300, PART 3.

3. The frequency of tests shall be in compliance with jurisdictional requirements.

PART 4 - MEASUREMENT AND PAYMENT – Not Applicable

END OF SECTION

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SECTION 02532
UTILITY STRUCTURES

PART 1 – GENERAL

1.1 Summary

A. Description of the Work

The work shall include the furnishing of all labor, tools, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and these specifications.

B. This Section includes the following structures and related appurtenances:

Precast concrete manholes
Pump Station wet well and valve vault.
Accessory vault.
Concrete anchor and thrust blocks.

C. Related Work Specified Elsewhere:

Trench Excavation and Backfill.....Section 02300

Sewer Line Construction.....Section 02560

Concrete .....Section 03300

1.2 Quality Assurance

A. Applicable Test Standards and Specifications

1. American Society for Testing and Materials (ASTM)

ASTM A48 - Gray Iron Castings

ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

ASTM C270 - Mortar for Unit Masonry

ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets

ASTM C478 - Precast Reinforced Concrete Manhole Sections

ASTM C1107 –Packaged Dry, Hydraulic-Cement Grout, Nonshrink

2. Federal Specification (FS)

FS FF-H-106 - General Hardware, Builder's, Locks and Door Trim

FS SS-S-00210 - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints

3. American Association of State Highway Transportation Officials (ASSHTO)

AASHTO H20 – Axial Loading

4. American Concrete Institute (ACI)

ACI 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary

B. Leakage Test

Test all manholes installed under this contract using the vacuum method described below. Provide all equipment necessary to perform the test. Coordinate test schedule with the Owner. Test will not be accepted unless witnessed by the Owner.

1. Plug all pipes entering the manhole, taking care to securely brace the plug from being drawn into the manhole.

2. Place the test head inside of the top of the cone section and inflate seal in accordance with the manufacturer’s recommendations.

3. Draw a vacuum of 10 inches of mercury and shut off the vacuum pump. With the valves closed, measure the time for the vacuum to drop to 9 inches. The manhole shall pass if the time for the vacuum to drop is greater than 60 seconds for 48” diameter manhole, 75 seconds for 60" diameter manhole and 90 seconds for 72" diameter manholes. In lieu of vacuum testing, a water tightness test may be performed by filling the manhole with water. The manhole shall pass if

the drop in water level does not exceed 0.001% of the manhole volume in one hour.

4. If the manhole fails the initial test, make necessary repairs with a non-shrink grout while the vacuum is still being drawn. Retest until a satisfactory test is obtained.

1.3 Submittals

A. Certificates of Compliance and Descriptions required for Frames and Covers.

B. Provide submittal for precast reinforced manholes per Section 01330, Submittals. The minimum information required for each manhole includes:

1. Top Elevation.

2. Base Elevation.

3. All pipe inverts entering and leaving the manhole.

4. All angles between lines leaving and entering the manhole.

1.4 Product Delivery, Storage And Handling

Take all necessary precautions in handling, storage and placement of manhole components and appurtenances. Replace defective materials.

PART 2 – PRODUCTS

2.1 Precast Manholes

A. Precast concrete manholes shall conform to ASTM C478 with ASTM C443 two-fin serrated flat gasket to concrete joint or with FS SS-S-00210 preformed plastic concrete joint.

B. Precast manholes shall be 48-inchs in diameter unless otherwise indicated.

C. Provide precast concrete manhole bases for all concrete precast manholes.

D. Manhole cone section shall conform to ASTM C478, 24 inch minmimum inside diameter of similar quality as manhole riser sections.

E. Manhole penetrations for pipes entering the manhole shall be provided with A-lock gaskets or approved equal and shall be included in the precast base section.

2.2 Manhole Frames And Covers

A. Shall conform to ASTM A48, Class 30B.

B. The word "sewer" shall be cast into the top

C. The cover and frame shall be a locking, nonventilated type for all locations in nonpaved areas, and nonlocking, nonventilated type in paved areas.

D. Provide a concrete collar around the frame. (Minimum 1' wide and 8" thick)

E. Provide one ("T" Handle Type) for 24-inch manhole frame and cover for locking units required for non-paved installations.

F. Acceptable Manufacturers:

1. Neenah Foundry Company Model R-1772 Cast Iron Manhole Frame & Cover

2. Model REXUS D 400 or PAMREX as manufactured by SAINT GOBAIN. (This manufacturer can provide a Ductile Iron Locking Lid as specified to be installed in easements.)

3. East Jordan Iron Works – Product no. 00102214 Catalog No. 1022Z3 with special lid containing the Logo.

4. Engineer approved equal.

G. Machine-bearing surfaces to provide even seating.

2.3 Non Shrink Grout

ASTM C1107, prepackaged.

2.4 Preformed Joint Material For Precast Concrete Manholes

Plastic or mastic as recommended by the barrel section manufacturer. Resistant to sewer environment to provide water tight seal between

concrete sections. Preformed joint material shall be Ram-Nek, Kent Seal, or equal.

PART 3 - EXECUTION

3.1 Excavation, Backfill And Compaction

A. Manholes

Prepare subgrade and bedding in accordance with Section 02300, Trench Excavation and Backfill. Provide bedding to depth and density indicated. Place and compact bedding and backfill with the same material and to the same density indicated for the adjacent trench.

1. Extensions

Place each extension plumb. Join sections with a full bed of preformed joint material. Cut off excess joint material to provide space for at least 1/4 inch depth of grout. Grout smooth the interior and exterior of the joint after the mastic has set.

2. Final Adjustment to Grade

Adjust frame and cover to required elevation with manhole extensions. Do not exceed maximum dimensions of 18 inches between the top of the frame and the top of the cone. Use preformed joint material to provide water tight seal between extension sections. Grout smooth the interior surface of sections and extensions.

3. Frame and Cover

Place frame and cover level to the elevation indicated or required to match surface conditions on full bed of mortar. Construct concrete collar as indicated.

4. Connections for precast concrete manholes

Grout around pipes with nonmetallic non-shrink grout. Install all piping using a flexible-rubber, entrance-hole gasket joint of pattern approved by the Engineer. Place pipe stub in manhole wall with bell or coupling outside manhole wall to provide flexible joints as indicated. Make provisions for future connections where indicated. Include plug or stopper capable

of withstanding 4.3 psi of internal or external pressure without leakage for future connections.

5. **Manhole Installation:** All manholes shall be installed in accordance with manufacturers instructions. A representative of the manufacturer must be present for the installation of all manholes until the manufacturer is satisfied that the Contractor is proficient in the installation of the manhole.

6. **Invert Channels:** Form invert channel with 4,000 psi Type II portland cement concrete. Make changes in direction of flow with smooth curves of as large a radius as size of manhole permits. Make changes in size and grade smoothly and uniformly. Slope floor of manhole adjacent to channels as indicated. Finish channel bottom smoothly without roughness, irregularity, or pockets.

B. Accessory Vault

1. **Design:** Construct to conform to Drawings of reinforced concrete pipe conforming to ASTM C76, Class II

2. **Installation:**

   a. Install vaults where indicated.

   b. Extend from centerline of pipe to ground surface.

   c. Notch lower section 2 inches greater than pipe OD and include fiberglass batt to prevent transmission of loads to pipe barrel.

3. **Manhole Frame and Cover:**

   a. Pattern as shown on drawings. Set frame level and to grade in mortar.

C. Air Valve Vault

1. **Design:**

   a. Precast and masonry construction as indicated.

   b. Precast concrete footings.

   c. Riser of ASTM C76, Class II pipe.

d. Top slab shall be precast as indicated.

2. Manhole Frame and Cover:

a. Pattern as shown on attached detail.

b. Set frame level and to grade in mortar.

D. CONCRETE ANCHOR AND THRUST BLOCKS

1. Install at tees, elbows, bends, and dead ends where indicated.

2. Place against undisturbed earth or rock.

3. Of design indicated or specified.

PART 4 – MEASUREMENT AND PAYMENT

4.1 Measurement And Payment

A. Measurement and payment for manholes shall be as specified in Section 01210 – Measurement and Payment.

**** END OF SECTION 02532 ****

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SECTION 02535
PIPE INSTALLATION

PART 1 - GENERAL

1.1 Summary

A. Description of Work

This Section includes handling, installation and testing of pipe, fittings, specials, and appurtenances as indicated or specified.

B. Related Work Specified Elsewhere

Excavation, Filling, and Backfilling for Structures.....Section 02321
Utility Structures .....Section 02532
Sewer Line Construction .....Section 02560

1.2 Quality Assurance

A. Applicable Standards and Specifications

1. American Society for Testing and Materials (ASTM):

ASTM D2321 - Underground Installation of Flexible Thermoplastic Sewer Pipe.

ASTM F1417 - Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air.

2. Federal Specifications (FS):

SS-S-00210 - Sealing Compound, Preformed Plastic, For Expansion Joints and Pipe Joints.

1.3 Delivery, Storage and Handling

A. Handle in a manner to ensure installation in sound and undamaged condition.

1. Do not drop or bump.

2. Use slings, lifting lugs, hooks, and other devices designed to protect pipe, joint elements, linings, and coatings.

B. Ship, move, and store with provisions to prevent movement or shock contact with adjacent units.

C. Handle with equipment capable of work with adequate factor of safety against overturning or other unsafe procedures.

PART 2 - MATERIALS

Specified in Section 02560.

PART 3 - EXECUTION

3.1 Installation

A. Verify all preliminary work has been completed prior to any sewer line construction.

B. Use equipment, methods, and materials ensuring installation to lines and grades indicated.

1. Maintain within tolerances specified or acceptable laying schedule.

a. **Alignment:** +1 inch per 100 feet in open cut or tunnel.

b. **Grade:** +1 inch per 100 feet.

2. Do not lay on blocks unless pipe is to receive total concrete encasement.

3. Obtain acceptance of method proposed for transfer of line and grade from control to the Work.

C. Install pipe of size, materials, strength class, and joint type with embedment indicated.

D. Install pipe with spigot or tongue ends in direction of flow. Obtain Engineer approval for deviations there from.

E. Clean interior of all pipe, fittings, and joints prior to installation. Exclude entrance of foreign matter during installation and at discontinuance of installation.

1. Close open ends of pipe with snug-fitting closures.

2. Do not let water fill trench. Include provisions to prevent flotation should water control measures prove inadequate.

3. Remove water, sand, mud, and other undesirable materials from trench before removal of end cap.

F. Brace or anchor as required to prevent displacement after establishing final position.

G. Perform only when weather and trench conditions are suitable. Do not lay in water.

H. Observe extra precaution when hazardous atmospheres might be encountered.

3.2 Jointing

A. General Requirements

1. Locate joint to provide for differential movement at changes in type of pipe embedment, impervious trench checks, and structures.

a. Not more than 8 inches from structure wall, or

b. Support pipe from wall to first joint with concrete cradle structurally continuous with base slab or pipe bedding material.

c. As indicated.

2. Perform conforming to manufacturer's recommendations.

3. Clean and lubricate all joint and gasket surfaces with lubricant recommended.

4. Use methods and equipment capable of fully seating or making up joints without damage.

5. Check joint opening and deflection for specification limits.

3.3 Temporary Plugs:

A. Furnish and install temporary plugs. Temporary plugs are to be installed
In the pipe at the end of each workday and the trench is to be completely backfilled.

3.4 Field Testing:

1. Acceptance Tests for Gravity and Low-Pressure Pipelines:

a. Alignment:

(1) Sewer shall be inspected by flashing a light between manholes or by physical passage where space permits.

(2) Sewer shall be inspected by videotaping entire line, from first to last manhole. During entire video recording, water must be flowing in the invert at a rate of at least one gallon per minute. The footage from the starting manhole must be recorded on the video screen, as well as the pipe run identification.

(3) Contractor shall clean pipe of excess mortar, joint sealant, and other dirt and debris prior to inspection.

(4) Determine from Videotaping or Physical Inspection:
Presence of any misaligned, displaced, or broken pipe.
Presence of visible infiltration or other defects.

(5) Correct defects as required prior to conducting leakage tests.

b. **Air Testing:** Perform air tests per ASTM C828 for clay or F1417 for plastic pipe at Contractor's option in lieu of exfiltration test for pipe sizes up to and including 42 inches in diameter and willinclude all lateral pipes to the property lines where applicable.

(1) Furnish all facilities required including:

Necessary piping connections.
Test pumping equipment.
Pressure gauges or manometers.
Bulkheads.
All miscellaneous items required.

(2) Obtain approval of equipment and acceptance of methods proposed for use.

(3) Conduct initial test on first run of pipe laid by each crew.

(a) Include a minimum of 10 lengths of pipe but not to exceed 500 feet.

(b) Perform before backfilling.

(c) Satisfactorily complete test before crew is permitted to continue pipe installation.

(4) Test remaining pipe in sections determined by Contractor and approved by Engineer.

(5) A wetted interior pipe surface on clay pipe is desirable and will produce more consistent test results.

(6) Plug ends of line and cap or plug all connections to withstand internal test pressures. Test plugs must be securely braced within the manholes.

(7) Introduce low-pressure air until internal air pressure is 4.0 psi greater than the average back pressure of ground water above the pipe invert.

(8) Allow two to five minutes for internal air pressure and temperature to stabilize. Adjust pressure to 3.5 psi and start test.

(9) Time required for pressu re to decrease 1.0 psi from 3.5 to 2.5 psig gr eater than the average back pressure of any ground water above the pipe invert shall not be less than the minimum test time in the following table for the given diameters:

Minimum Test Times (Minutes) in Plastic Pipe

Nominal Pipe Diameter	Minimum Time (min.)*	Length for Min. Time	Time for Longer Length(s)*
4 in.	3:46	597 ft.	0.380 L
6 in.	5:40	398 ft.	0.854 L
8 in.	7:34	298 ft.	1.520 L
10 in.	9:26	239 ft.	2.374 L
12 in.	11:20	199 ft.	3.418 L
15 in.	14:10	159 ft.	5.342 L
18 in.	17:00	133 ft.	7.692 L
21 in.	19:50	114 ft.	10.470 L
24 in.	22:40	99 ft.	13.674 L
27 in.	25:30	88 ft.	17.306 L
30 in.	28:20	80 ft.	21.366 L
33 in.	31:10	72 ft.	25.852 L
36 in.	34:00	66 ft.	30.768 L

* For 3.5 kPa (0.5 psi) pressure test drop, required test times shall be exactly one-half the values shown.

(10) If the section of line to be tested includes more than one pipe size, calculate the test duration for the length of each size and add the test durations to arrive at the total duration of the testing period for the section.

(11) Repeat test as necessary after all leaks and defects have been repaired.

2. Acceptance Tests for Pressure Pipelines:

a. Perform hydrostatic pressure and leakage tests.

(1) Conform to AWWA C600 procedures. As modified herein.

(2) Perform after backfilling.

b. Test separately in segments between sectionalizing valves, between a sectionalizing valve and a test plug, or between test plugs.

(1) Select test segments such that adjustable seated valves are isolated for individual checking.

(2) Contractor shall furnish and install test plugs.

(a) Including all anchors, braces, and other devices to withstand hydrostatic pressure on plugs.

(b) Be responsible for any damage to public or private property caused by failure of plugs

c. Limit fill rate of line to available venting capacity. Fill rate shall be regulated to limit velocity in lines when flowing full to not more than 0.05 to 1 fps.

d. Owner shall make water for testing available to Contractor at nearest source.

e. Pressure and Leakage Test:

(1) Test pressure shall not exceed 1.25 times the working pressure at the highest point along the test section.

(2) Test shall be at least 2-hour duration. Maintain pressure throughout test within 5 PSI of the test pressure.

(3) Leakage test shall be conducted concurrently with the pressure test.

(4) Acceptable when leakage does not exceed that determined by the following formula (in English Units):

L = 0.0000075SD(P)1/2, in which
L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches
P = average actual leakage test pressure in psig.

(5) These formulas are based on an allowable leakage of 11.65 gpd/mile/in of nominal diameter at a pressure of 150 psi.

(6) When testing against a closed metal-seated valve, an additional leakage per closed valve of 0. 0078 gal/hr/in of nominal valve size shall be allowed.

(7) Repeat test as necessary.

(a) After location of leaks and repair or replacement of defective joints, pipe, fittings, valves or hydrants. All visible leaks are to be repaired regardless of the amount of leakage.
(b) Until satisfactory performance of test.

(8) Engineer will witness pressure and leakage test.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

Measurement and payment will be made in accordance with Section 01210 - Measurement and Payment.

**** END OF SECTION 02535 ****

SECTION 02560

SEWER LINE CONSTRUCTION

PART 1 - GENERAL

1.1 Summary

A. Description of the Work

The work to be performed in accordance with this section includes the construction or extension of sewer service lines including appurtenances such as laterals, service taps, clean-outs, and valves.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all operations required to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Pipe Installation.....Section 02535
Trench Excavation and Backfill.....Section 02300

1.2 Quality Assurance

A. Applicable Test Standards and Specifications

1. American Association of State Highway and Transportation Officials (AASHTO)

2. American National Standards Institute (ANSI)

B16.1 - Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.

B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges.

3. American Society for Testing and Materials (ASTM)

A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile.

A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe

D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.

D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings

D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

4. American Water Works Association (AWWA)

AWWA C105 – American National Standard for Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.

B. Test Method and Allowable Tolerances

1. Description

Test each section of gravity and pressure pipeline for leakage and pressure rating after backfill has been placed

but prior to final surface replacement. **CONTRACTOR** shall perform the following: pressure testing, Mandrel testing, lamping and video inspection. Perform leakage tests with the air test as specified in Section 02535. Test laterals from the main line to property line. Perform deflection test on sections as determined by the **OWNER**.

2. Field Pressure Tests

Perform acceptance tests as specified in Section 02535, Pipe Installation, only in the presence of the **ENGINEER**.

3. Deflection Test for PVC Pipe

In addition to the test described above, the **CONTRACTOR** shall perform a deflection test on 100% of all pipelines installed under this Contract. **CONTRACTOR** shall provide rigid ball or mandrel deflection testing equipment and labor. **CONTRACTOR** shall obtain approval of equipment and acceptance of method proposed for use. Test shall be performed without mechanical pulling devices.

Any section of the pipeline which shows deflection in excess of 5 percent of the average inside diameter as per ASTM D3034 shall be removed and replaced.

ENGINEER may require **CONTRACTOR** to test PVC pipe after backfill has been in place for 30 days.

After acceptance but prior to the termination of the warranty period, the **OWNER** may test the long term deflection of the pipelines. If the **OWNER** determines that the deflection has exceeded 7-1/2 percent of the average inside diameter, that portion of the pipeline shall be corrected by the **CONTRACTOR** at no cost to **OWNER**.

4. Closed Circuit TV Inspection

CONTRACTOR shall video inspect all pipeline interiors of the sewer line. All pipelines shall be cleaned, pressure tested and mandrel tested prior to video inspection. **CONTRACTOR** shall supply **ENGINEER**/**OWNER** with videos prior to placing new sewer line in service.

The **OWNER** reserves the right to conduct additional visual inspections to the interior of the sewer line using a television camera. Any defects in the pipe or construction methods revealed shall be corrected by the **CONTRACTOR** at no additional cost to the **OWNER**.

1.3 Submittals

A. Submit as specified in Section 01330.

B. Submit the following for acceptance prior to fabrication:

1. Pipe and joint details.

2. Special, fitting, and coupling details.

3. Laying and installation schedule.

4. Specifications, data sheets, and affidavits of compliance for protective shop coatings and linings.

5. Manufacturer's design calculations.

C. Certificates and Affidavits: Furnish the following prior to shipment:

1. Affidavit of compliance with applicable standard.

2. Certificate of origin for all steel flanges. Flanges shall be manufactured in the U.S.A.

3. Test certificates.

1.4 Product Delivery, Storage and Handling

Protect all pipe during unloading, storage and placement against impact shocks and free falls. Replace damaged or defective materials.

1.5 Job Conditions

Maintain the condition and operation of existing sewer system. Reroute the existing flows if required with the appropriate equipment. Costs associated with maintaining the condition and operation of the existing

sewer system shall be borne by the **CONTRACTOR** at no additional cost to the **OWNER**.

PART 2 - MATERIALS

2.1 Pipe Requirements

A. Furnish pipe of materials, joint types, sizes and strength classes as indicated or specified. Higher strength pipe may be furnished at **CONTRACTOR**'s option. Furnish maximum pipe lengths produced by the manufacturer.

B. Pipe shall be designed to withstand all stresses resulting from external loads and internal pressures listed in the following table plus applicable allowance for surge unless otherwise specified.

C. Pipe bedding as specified and as indicated.

D. Pipe Marking

1. All pipe, fittings and specials shall be marked conforming to the applicable standard specification under which the pipe is manufactured and as otherwise specified.

2. Mark field location of fittings and specials by line number and station.

E. Coating for Ductile Iron Pipe

1. All pipe for buried service shall be encased in polyethylene pipe wrap in accordance with AWWA C105.

2. All pipe for exposed service shall be coated in accordance with Section 9900-Protective Coatings.

2.2 Polyvinyl Chloride (PVC) Gravity Sewer Pipe

A. Design and Manufacture of Pipe and Fittings

1. Pipe and fittings

a. Pipe and fittings for 4-inch through 15-inch shall conform to requirements of ASTM D3034 SDR 35, and to ASTM F679- PS 46 for 18 inch through 27 inch

nominal pipe sizes. The pipe shall be made of PVC plastic having cell classification of 12454-B or 12454-C as defined in ASTM D1784.

2. Joints

a. Push on joints shall conform to ASTM D3212 and gaskets to ASTM F477. Solvent cements for joining pipe and socket-type fittings shall conform to ASTM D2564.

3. Fittings

a. Tee or wye connection suitable for assembly to 4-inch house or building sewers shall be one of the following types:

i. Reducing-branch tee or wye fitting with elastomeric-gasket joints same as pipe. Service line connections shall be bell-end with an elastomeric ring-gasket and a minimum wall thickness of SDR 35.

ii. Saddle-type fittings with an elastomeric ring gasketed bell-end service connection and minimum wall thickness of SDR 35. Saddle-type fitting to be supplied with a rubber sealing gasket and stainless steel straps for connection to pipe.

Furnish permanent plugs for future service line connections and testing.

4. Connections

a. Furnish any special flexible couplings required for manhole tie-ins or connections to other rigid structures.

B. Service Saddles

PVC saddle body with neoprene pressure seal. ASTM D3034, SDR 35. Stainless steel straps and bands.

2.3 Polyvinyl Chloride (PVC) Pressure Sewer Pipe

A. Design and Manufacture of Pipe

1. Pipe shall conform to requirements of ASTM D2241 (pressure-rated pipe, SDR 26) for 3-1/2 inch and smaller nominal pipe sizes. The pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C or 12454-D as defined in ASTM D1784.

B. Fittings

1. Fittings shall conform to the requirements of ASTM D2466.

C. Joints

1. Jointing of pipe and socket-fittings shall be by solvent cements conforming to ASTM D2564.

2.4 Ductile Iron Pipe

A. Design and Manufacturer of Pipe

1. Pipe shall conform to requirements of AWWA C-151. The pipe shall be rated at the minimum standard pressure rating for the pipe size indicated. The pipe shall be cement mortar lined and seal coated for potable water in accordance with AWWA C-104.

B. Fittings

1. Fittings for push-on joints and mechanical joint pipe shall conform the AWWA C-110 cement mortar lined and seal coated for potable water in accordance with AWWA C-104.

2. Fittings for flanged pipe shall conform to AWWA C-115. Ductile Iron Pipe used for threaded flanges shall be thickness Class 53 minimum.

3. Flange bolts and gaskets shall conform to AWWA C-115, Appendix A.

C. Polyethylene Pipe Wrap

Encase all pipe, fittings and appurtenances with polyethylene film in accordance with AWWA C105, Method A, Class C (Black). Place polywrap on each section of pipe prior to joining. Cut polyethylene tube 2 feet longer than length of pipe. Fold back excess over top of pipe and secure with tape at quarter points along the length of the pipe. Secure to previous section with 360 degree tape wrap.

Adhesive tape shall be approximately 2 inches wide, plastic backed and capable of bonding securely to metal surfaces and/or polyethylene material. Acceptable manufacturers include Polyken No. 900, Scotchrap No. 50, or **ENGINEER**-approved equal.

2.5 Polyethylene Pipe

A. Polyethylene pipe for package grinder pump stations to service as force mains shall be of the size indicated and shall conform to ASTM D2239 SIDR7 and have a pressure rating of 200 psi.

2.6 Sleeves and Couplings

A. Sleeves

1. Couplings:

a. Pipe end space shall not exceed one-third of the sleeve laying length.

b. Interior, exposed, exterior, or buried service as indicated.

2. Couplings for service lines shall be rubber boot with steel sleeve such as Furnco Coupling or approved equal.

3. Couplings for Ductile Iron Pipe shall be Solid Sleeve Couplings with mechanical joint ends conforming to AWWA C-111.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

Verify that all preliminary work has been performed and that the sewer main has been tested and accepted prior to installation and connection of house service lines.

3.2 Polyethylene Pipe Wrap

Encase all pipe, fittings and appurtenances with polyethylene film in accordance with AWWA C105, Method A, Class C (Black). Place polywrap on each section of pipe prior to joining. Cut polyethylene tube 2 feet longer than length of pipe. Fold back excess over top of pipe and secure with tape at quarter points along the length of the pipe. Secure to previous section with 360 degree tape wrap.

3.3 Installation

In accordance with SECTION 02535 - PIPE INSTALLATION

PART 4 – SEPTIC TANK AND LATERIAL FIELD CLOSURE:

4.1 Septic Tank Closure:

Upon completion of the connection of the house sewer line to the new sewer, the **CONTRACTOR** shall commence with the closure of the existing septic tank system.
Pump out the septic tank utilizing a pump truck for disposal offsite, thoroughly rinse and clean the tank and pump out second time. Haul and dump septage to the Mohave County Landfill, or other sites, as approved by the **ENGINEER**/**OWNER**. The rinse water shall be pumped to an active approved sewer through a cleanout approved by the **ENGINEER**. The septic tank lid may be broken into pieces no larger than 8" in any dimension which can be used as backfill in the existing septic tank cavity. Rinse the inside of the septic tank with a chorine-based disinfectant in a 12 percent solution after final flushing. Fill the remaining portions of the tank with ¾-inch minus materials and compact to 90% density to assure that settlement will not occur. Backfill the yard area and completely restore the yard to its original condition as evidenced by the preconstruction photographs. The **CONTRACTOR** will be charged for the dumping of septic waste at the current rate charged for dumping. The location for dumping of waste shall be the Mohave County Landfill, or other sites, as approved by the **ENGINEER**/**OWNER**.

PART 5 - MEASUREMENT AND PAYMENT

5.1 Measurement and Payment

A. Measurement and payment will be made in accordance with Section 1210 - Measurement and Payment.

END OF SECTION

SECTION 02570

MANHOLE CONSTRUCTION

PART 1 – GENERAL

1.1 Description

A. Description of the Work

The work to be performed in accordance with this section includes precast or cast in place concrete manhole construction for sewer and storm drain collection systems.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Trench Excavation and Backfill.....Section 02300
Sewer Line Construction.....Section 02560
Storm Drain Construction.....Section 02500

1.2 Quality Assurance

A. Reference Test Standards and Specifications

ASTM A48, Specifications for Grey Iron Castings

ASTM C478, Specification for Preca st Reinforced Concrete Manhole Sections

ASTM C1107, Specification for Packaged Dry, Hydraulic-Cement Grout, Nonshrink

ASTM D4101, Specificati on for Propylene Plastic Injection and Extrusion Materials

AWWA C210, Standard for Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines

B. Leakage Test

Test all manholes installed under this contract using the vacuum method described below. Provide all equipment necessary to perform the test. Coordinate test schedule with the **OWNER**. Test will not be accepted unless witnessed by the **OWNER**.

1. Test each manhole immediately after assembly and prior to backfilling.

2. Plug all lift holes with an approved non-shrink grout.

3. Plug all pipes entering the manhole, taking care to securely brace the plug from being drawn into the manhole.

4. Place the test head inside of the top of the cone section and inflate seal in accordance with the manufacturers recommendations.

5. Draw a vacuum of 10 inches of mercury and shut off the vacuum pump. With the valves closed, measure the time for the vacuum to drop to 9 inches. The manhole shall pass if the time for the vacuum to drop is greater than 75 seconds for 60" diameter manhole and 90 seconds for 72" diameter manholes.

6. If the manhole fails the initial test, make necessary repairs with a non-shrink grout while the vacuum is still being drawn. Retest until a satisfactory test is obtained.

1.3 Submittals

A. Certificates of Compliance and Descriptions

1. Frame and Cover

2. Manhole Sections

3. Precast Base

1.4 Product Delivery, Storage and Handling

Take all necessary precautions in handling, storage and placement of manhole components and appurtenances. Replace defective materials.

PART 2 – MATERIALS

2.1 Manhole Bases

A. Waterstops

Neoprene or rubber, resistant to sewage environment as recommended by the manufacturer. Place water stop around all pipes penetrating the manhole base. Place the waterstop in the middle of the manhole wall per the manufacturer's recommendation. Place non-shrink grout on each side of the water stop, if required, to thoroughly seal and protect the joint.

B. Precast Concrete Base

ASTM C478, Type V cement, minimum 28 day compressive strength 4,000 psi, minimum 6 inches of concrete between invert and exterior of the base, reinforced as required. Base shall be coated with polymorphic polymer coating.

C. Cast In Place Concrete Base

Specification Section 3300, Class A, Concrete.

2.2 Precast Concrete Manhole Barrel Sections

ASTM C478, Type V cement, 60 inch inside diameter. Eccentric cones with the same wall thickness and reinforcement, sized for 24 inch frame and covers.

2.3 Flat Slab Tops

ASTM C478, Type V cement, HS20 design loading, sized for 24 inch frame and cover.

2.4 Manhole Extension

ASTM C478, 24 inch inside diameter of similar quality as manhole sections.

2.5 Manhole and Base Coatings

PPC coating as manufactured by Polymorphic Polymers Corporation or an approved equal. Applied to all interior manhole surfaces.

2.6 Preformed Joint Material

Plastic or mastic as recommended by the barrel section manufacturer. Resistant to sewer environment to provide water tight seal between concrete sections. Preformed joint material shall be Ram-Nek, Kent Seal, or equal.

2.7 Non Shrink Grout

ASTM C1107, prepackaged

2.8 Frame and Cover

ASTM A48, Class 30. The cover and frame will be a locking non-ventilated type. The word "sewer" shall be cast into the top of the lid. The bearing surfaces of the frames and covers shall be machined and the cover shall sear firmly on a gasket mounted in the frame without rocking. Painted or dipped in commercial quality asphaltic paint. Frame and covers shall be a model GTS as manufactured by Pont-a-Mousson Everett Enterprises, Inc. or approved equal. Provide a concrete collar around the frame.

PART 3 – EXECUTION

3.1 Preliminary Investigation of the Work

Verify all preliminary work has been performed in accordance with the plans and specifications prior to manhole construction.

3.2 Excavation, Backfill and Compaction

Prepare subgrade and bedding in accordance with Specification Section 2300, Trench Excavation and Backfill. Provide bedding to depth and density indicated. Place and compact bedding and backfill with the same material and to the same density indicated for the adjacent trench.

3.3 Manhole Base

A. Precast Concrete Base

Place precast base to the line and elevations indicated on firm, dense bedding. Join base to pipe per manufacturer's recommendations and as specified herein. Coat with Polymorphic Polymer coating.

B. Cast In Place Concrete Base

Construct cast in place concrete base per Specification Section 3300, Concrete Structures, to the line and elevation indicated. Place concrete with pipe ends firmly held in position and with waterstops in place. Consolidate concrete as required to provide dense, impermeable base. Shape invert channels to a smooth semi-circular shape to match diameter of pipe. Make direction changes of flow with a smooth curve having a radius as large as possible. Change grade and size of channel gradually and evenly.

Construct joint on base to receive manhole barrel section. Coat with polymorphic Polymer coating.

When constructing manhole bases over an existing pipe, provide waterstops and place concrete to the springline of the existing pipe. Cut out the top half of the existing line after the concrete has set and grind exposed edges smooth. Leave the existing pipe in the channel.

3.4 Sections and Extensions

Place each section and extension plumb. Join sections with a full bed of preformed joint material. Cut off excess joint material to provide space for at least ¼ inch depth of grout. Grout smooth the interior and exterior of the joint after the mastic has set.

3.5 Final Adjustment to Grade

Adjust frame and cover to required elevation with manhole extensions. Do not exceed maximum dimensions of 18 inches between the top of the frame and the top of the precast cone or flat slab. Use preformed joint material to provide water tight seal between extension sections. Grout smooth the interior surface of sections and extensions.

3.6 Frame and Cover

Place frame and cover to the elevation indicated or required to match surface conditions. Construct concrete collar as indicated.

3.7 Abandon Existing Manhole

At the location indicated on the plan, abandon the existing sewer manhole by removing all existing manhole components to at least three (3) feet below the existing grade, plug the pipe ends and backfill the voids from the excavation and remaining portion of the existing manhole.

Remove the existing frame, cover, concrete collar, grade rings, cone sections, flat top sections, and barrel sections as required to at least three (3) feet below the existing grade. Plug all pipe ends exposed by the excavation and inside the manhole. Pipe plugs shall be concrete and extend at least 2 feet into the existing pipe to provide a permanent seal against water and soil intrusion. Place and compact select or granular backfill to the existing finish grade per specification section "Trench Excavation and Backfill".

3.8 Adjust Existing Manhole Rim to Finished Grade

Adjust all existing manhole frame and covers to finished grade elevations. The elevation adjustment shall be accomplished by the removal and replacement of the existing components as required. Remove the frame and cover, grade rings, cone sections, flat top sections and barrel sections to the depth required to replace the components to the desired elevation. Furnish and install new or salvaged components in accordance with this specification. Salvaged components shall only be incorporated into the new work if they meet the quality standards of new materials specified herein and are not visibly damaged beyond simple repair. The **OWNER** shall make all decisions regarding the reuse of salvaged material before the salvaged material is incorporated into the work. All decisions by the **OWNER** shall be final. Provide concrete collar around frame after final adjustment. The concrete shall be protected from traffic for a minimum of 48 hours.

3.9 Water Line Separation

When constructing sewer manholes near water lines, the ADEQ regulations governing this type of work shall be used, as follows. No water pipe shall pass through or come in contact with any part of the sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet, measured from the center of the manhole.

PART 4 – MEASUREMENT AND PAYMENT

4.1 Measurement

A. Sanitary Sewer Manhole, Storm Drain Manhole, Manhole Over Existing Line, Abandon Existing Manhole

Measurement of manhole construction will be the number per each.

B. Adjust Existing Manhole Rim to Finish Grade

Measurement of this item will be the number of each existing manhole rims that are adjusted to finished grade.

4.2 Payment

A. Sanitary Sewer Manhole, Storm Drain Manhole, and Manhole Over Existing Line.

Payment for each manhole will be based on the contract unit price for each manhole and shall be considered as full payment for furnishing and installing the manhole, including excavation, backfill, connecting new and existing pipes, the concrete base, barrel sections, cones or flat slabs, extensions, rim and cover, any necessary surface repair, and all miscellaneous work and materials required to complete the work.

B. Abandon Existing Manhole

Payment for abandoning existing manholes will be based on the contract unit price per each and shall be full compensation for excavation, removal of existing components, furnishing all materials required and backfilling required to complete the work.

C. Adjust Existing Manhole Rim to Finish Grade

Payment for adjusting existing manhole rims will be based on the unit price per each and shall be full compensation for furnishing and installing all materials and work required to complete the item.

See Section 00310 Bid Schedule for Bid Items.

END OF SECTION

SECTION 02600

SUBGRADE PREPARATION

PART 1 - GENERAL

1.1 Description

A. Description of the Work

The work to be performed in accordance with this section includes the preparation of native or excavated soils prior to the placement of subbase, base course, pavement, curb, gutter, driveways, sidewalks or other structures.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Clearing and Grubbing	Section 02100
Earthwork	Section 02200
Trench Excavation and Backfill	Section 20300

1.2 Quality Assurance

A. Reference Test Standards and Specifications

ASTM D1556, Density of Soil in Place by the Sand-Cone Method.

ASTM 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

ASTM D6938-08a, Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D6938-08a, Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.

Rock Correction Procedure for Maximum Density Determination, ARIZ 227.

B. Frequency of Testing

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.

a. One test for each different class or type of material shall be provided by the prior to beginning construction.

b. **CONTRACTOR** shall provide additional test when previous test is suspect, due to subtle changes in the material, as determined by the **OWNER**.

2. Density of In-Place Soil by the Sand Cone or by Nuclear Methods, ASTM D1556 or D6938-08a

a. **CONTRACTOR** will perform a minimum of one test per lift per 2,000 square yard per type of material.

b. **CONTRACTOR** will perform additional test as required to ensure proper compaction.

C. Testing Tolerances

1. Percent Relative Compaction

Not less than as specified on plans or in these specifications.

2. In-Place Moisture Content

As required to achieve minimum relative compaction.

3. Soft or Yielding Surfaces

Regardless of the percent compaction obtained by test, areas which are soft and yield under the load of construction equipment are to be removed and replaced at no additional cost.

1.3 Submittals

A. Materials Test Report

1. Report on maximum dry density and optimum moisture content prior to beginning of construction.

1.4 Job Conditions

A. Soils Report

This section does not apply to this project.

PART 2 - MATERIALS

2.1 General

A. Unsuitable materials not to be incorporated in the work.

1. Organic matter such as peat, mulch, organic silt or sod

2. Soil containing expansive clays

3. Material containing excessive moisture

4. Poorly graded coarse material

5. Material with particle sizes in excess of 6 inches

6. Material which will not achieve density and/or bearing requirements

2.2 Earthwork Balance

No attempt has been made to estimate cut and fill earthwork quantities. The **CONTRACTOR** is solely responsible for an estimation of quantities of earthwork materials to construct the project as shown.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

The **CONTRACTOR** is to satisfy himself that all preliminary work including clearing, grubbing and staking has been performed in accordance with these specifications prior to subgrade preparation.

3.2 Subgrade Preparation

A. Scarification

Scarify and loosen to a minimum depth of 6 inches. Remove any particles larger than 6 inches.

B. Moisture Conditioning

Condition the soil by aerating or wetting to the moisture content required to obtain the minimum compaction requirements. Mix the soil such that the moisture content is uniform throughout the lift. No payment will be made for conditioning of the soil, wetting, or drying.

C. Compaction

Construct subgrade cut and fill areas to achieve a uniform soil structure. Compact the subgrade to the percent relative compaction indicated on the plans. When not shown on the plan, compact as indicated herein.

Major streets, other streets and traffic ways	95%
Curbs, gutters and sidewalks	95%
Area to receive Engineered fill	95%

D. Subgrade Tolerances

Below pavement, sidewalk, curb and gutter	$\pm$1/4 inch
Below base course	$\pm$3/4 inch

Variations from the plan grade and cross section shall be compensating so that the average grade and cross section are obtained.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No measurement will be made for this item.

4.2 Payment

No payment will be made for subgrade preparation. This item shall be considered incidental to Section 2630, Asphalt Concrete Pavement.

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SECTION 02610

AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 Description

A. Description of Work

The work to be performed in accordance with this section includes furnishing and placing an aggregate base course to plan grades and cross sections.

This work shall include the furnishing of all labor, tools, equipment, materials and performing all operations required to provide a complete item in accordance with the project plans and specifications.

B. Related Work Specified Elsewhere

Earthwork	Section 02200
Subgrade Preparation	Section 02600

C. Definitions

1. Crushed Rock

Crushed rock shall consist of the product obtained by crushing rock, stone, or gravel so that at least 50 percent by weight of aggregate is retained on the No. 4 sieve for 3/4 inch or larger maximum sizes, and 50 percent is retained on the No. 8 for maximum sizes less than 3/4 inch. All crushed rock particles shall have at least one rough, angular surface produced by crushing.

2. Gravel

Material designated herein as gravel shall be composed entirely of particles that are either fully or partially rounded and water-worn. The quality and gradation requirements shall be as specified herein.

3. Sand

Sand shall consist of fine granular material produced by the crushing of rock or gravel or naturally produced by disintegration of rock and shall be sufficiently free of organic material, mica, loam, clay, and other deleterious substances to be thoroughly suitable for the purpose for which it is intended.

1.2 Quality Assurance

A. Reference Test Standards and Specifications

ASTM C117, Test Method for Material Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.

ASTM C131, Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregates

ASTM D1556, Density of Soil in Place by the Sand-Cone Method.

ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

ASTM D6938-08a, Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D6938-08a, Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.

ASTM D4318, Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

Rock Correction Procedure for Maximum Density Determination, ARIZ 227.

B. Frequency of Testing

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.

a. One test for each different class to type of material shall be provided by the **CONTRACTOR** prior to placing aggregate base.

b. **CONTRACTOR** shall provide additional test when previous test is suspect, due to subtle changes in the material, as determined by the **OWNER**.

2. Density of Soil In-Place by the Sand Cone or by Nuclear Methods, ASTM D1556 or D6938-08a.

a. **CONTRACTOR** will perform a minimum of one test per lift per 2,000 square yards per type of material.

b. **CONTRACTOR** will perform additional test as required to ensure proper compaction.

3. Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM C136.

a. **OWNER** may perform sampling of Aggregate Base in place to check conformance with gradation requirements.

C. Testing Tolerances

1. Percent Relative Compaction

Not less than as specified on plans or in these specifications.

2. In-Place Moisture Content

As required to achieve minimum relative compaction.

3. Soft or Yielding Surfaces

Regardless of the percent compaction obtained by test, areas which are soft or yield under the load of construction equipment are to be removed and replaced at no additional cost.

1.3 Submittals

A. Materials Test Report

Report on maximum dry density and optimum moisture content, as well as gradation prior to beginning of construction.

1.4 Job Conditions

A. Soils Report

This section does not apply to this project.

PART 2 - MATERIALS

2.1 Aggregate Base

Crushed aggregate or processed natural mineral shall be clean, hard, sound and free of any detrimental quantity of soft, friable elongated or laminated pieces, organic matter or other deleterious substances. Aggregate base shall meet the following requirements:

A. Grading

ASTM C136 and ASTM C117

Sieve Size	Percent by Weight Passing
1-1/8"	100
No. 4	38-65
No. 8	25-60
No. 30	10-40
No. 200	3-12

B. Percentage of Wear

ASTM C131, maximum percentage of wear of 40 after 500

revolutions.

C. Plasticity Index and Liquid Limit

ASTM D4318, maximum plasticity index of 5, maximum liquid limit of 25 percent.

D. Fractured Faces

1. Maximum aggregate size of 3/4 inch or greater, at least 50 percent of aggregate retained on the No. 4 sieve, at least one fractured face.

2. Maximum aggregate size less than 3/4 inch, at least 50 percent of aggregate retained on the No.8 sieve, at least one fractured face.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

Verify that all of the preliminary work including clearing, grubbing, subgrade preparation and staking has been performed in accordance with the plans and specifications prior to placing aggregate base.

3.2 Base Course Placement and Compaction

A. Moisture Conditioning

Condition the base by aerating or wetting to the moisture content required to obtain the minimum percent compaction. Mix the soil such that the moisture content is uniform throughout the lift. Take care so as not to damage the subgrade below.

B. Lift Thickness

Place and compact base course lifts, 6 inches or less, in a single lift. For lifts in excess of 6 inches thick, place and compact in successive equal layers not to exceed a maximum of 6 inches.

C. Compaction

Construct base course to achieve a uniform soil structure. Compact the base course to a relative density of not less than 100 percent.

D. Base Course Tolerances

Place and compact the base course to the grade and cross sections indicated. The base course shall not vary from plan grade and cross sections by more than 1/4 inch.

E. Deficiencies

Remove and replace deficiencies prior to placement of the pavement. Deficiencies in the base course, covered by paving will be removed and replaced at no additional to the **OWNER**.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

The quantity of aggregate base course to be paid for will be determined by measurement of the number of square yards of each thickness placed and accepted by the **OWNER** as complying with the drawings and specifications. The quantity shall be based on plan dimensions.

4.2 Payment

Payment will be made at the contract unit price per square yard for each thickness of aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all the labor, equipment, tools and incidentals necessary to complete the item.

See Section 00310 Bid Schedule for Bid Items.

SECTION 02620

BITUMINOUS PRIME AND TACK COAT

PART 1 - GENERAL

1.1 Summary

A. Description of Work

The work to be performed in accordance with this Section includes furnishing and applying emulsified asphalt prime and tack coats prior to asphalt concrete paving.

This work shall include the furnishing of all labor, tools, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and specifications.

B. Related Work Specified Elsewhere

Aggregate Base Course .....Section 02610
Asphalt Concrete Pavement .....Section 02630

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American Society for Testing and Materials (ASTM)

ASTM C117 - Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing.

ASTM C136 - Sieve or Screen Analysis of Fine and Coarse Aggregates.

ASTM D420 - Guide to Site Characterization for Engineering Design, and Construction Purposes.

ASTM D977 - Emulsified Asphalt.

ASTM D2397 - Cationic Emulsified Asphalt.

1.3 Submittals

A. Certificates of Compliance

1. Bituminous Prime Coat.
2. Bituminous Tack Coat.

B. Suppliers Recommendation

1. Type and Grade of Bituminous Prime Coat.
2. Type and Grade of Bituminous Tack Coat.
3. Application Temperature, Dilution Recommendations.

1.4 Product Delivery Storage and Handling

Take all precautions in handling, storing and applying emulsified asphalts so as not to damage the product or damage the environment.

PART 2 - MATERIALS

2.1 Bituminous Prime and Tack Coats

A. Alternatives

Select one of the emulsions listed below as recommended by the emulsion supplier.

B. Bituminous Prime Coat

ASTM D977, SS-1, SS-1h, or ASTM D2397, CSS-1 or CSS-1h.

C. Bituminous Tack Coat

ASTM D997, SS-1, SS-1h, or ASTM D2397, CSS-1 or CSS-1h. Diluted 1 to 1 with water.

D. Application Temperatures

Apply bituminous prime and tack coat at suppliers recommended temperature but in no case less than 75 degrees Fahrenheit.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

Verify all preliminary work has been performed in accordance with the plans and specifications prior to application of bituminous prime and tack coats.

3.2 Weather Limitations

Apply bituminous tack and prime coat only when the application surface is dry, when the atmospheric temperature is above 60 degrees Fahrenheit and when the weather is not foggy, rainy, or extremely windy.

3.3 Bituminous Prime Coat

A. Preparation of Surface

Construct base course according to Section 2610, Aggregate Base Course, to the grade and cross section indicated.

B. Application of Bituminous Material

1. Dilution

Not used.

2. Area Application

Immediately before applying the prime coat, sweep the base course surface with a power broom to remove all loose dirt and other objectionable material.

Apply bituminous prime coat only to surfaces that are slightly damp or dry with a self-powered, pressure operated distributor. The distribution truck shall be capable of applying the prime coat at the specified rate, with an allowable deviation of 5 percent.

3. Application Rate

Uniformly apply prime coat at a rate of 0.20 to 0.40 gals/square yard. The exact rate of application shall be as recommended by the supplier and approved by the Owner.

Apply the prime coat at the approved application rate in one application.

4. Drying Time

Maintain the integrity of the primed surface until the bituminous material has sufficiently dried (breaks) so it will not be picked up or otherwise damaged by the paving operation. If the bituminous material has not cured within 36 hours, a sand blotter material shall be spread over the required areas.

The sand blotter material shall conform to the following requirements:

Sieve Sizes	Percentage by Weight Passing Sieve
1/2-inch	100
No. 4	90-100
No. 16	30-75
No.200	0-12

Test	Method	Requirements
Sieve Analysis	ASTM C136 & C117	Above
Sampling Aggregate	ASTM D420	-----
Organic Impurities	ASTM C403	Maximum *

* Organic Plate Number

3.4 Bituminous Tack Coat

A. Preparation of Surface

Thoroughly clean surfaces to receive tack coat of all loose material including dirt and other objectionable material. Use equipment specifically suited for the work.

B. Application of Bituminous Material

1. Dilution

Dilute asphalt as recommended by the supplier and as approved by the Owner. Unless otherwise approved dilute 1 to 1 with water. Always add water to emulsion.

2. Area Application

Apply bituminous track coat with a pressure operated distributor truck designed, equipped, maintained and operated for such use. The distributor truck shall meet the requirements of that used for the application of the prime coat.

3. Vertical Edges and Miscellaneous Work

Apply bituminous tack coat to all edges except driveways with mechanical or hand held spray equipment. Brushed or poured application will not be accepted.

4. Application Rate

Apply bituminous tack coat at a rate of 0.05 to 0.10 gallons per square yard. The exact rate of application shall be as recommended by the supplier and approved by the Owner. Apply the tack coat at the approved application rate in one application.

5. Drying Time

Maintain the tacked surface until the bituminous material has sufficiently dried (breaks) so it will no longer be picked up or otherwise damaged by the paving operation.

PART 4 - MEASUREMENT AND PAYMENT – Not Applicable

**** END OF SECTION 02620 ****

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SECTION 02630

ASPHALT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 Summary

A. Description of Work

The work to be performed in accordance with this section includes the furnishing of all materials and the placing of asphalt concrete for roadway pavements.

The work covered shall include furnishing of all labor, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and these specifications.

B. Related Work Specified Elsewhere

Aggregate Base Course .....Section 02610
Bituminous Prime and Tack Coat.....Section 02620

C. Definitions

1. Relative Density

Relative density is determined by the bulk specific gravity of the compacted pavement divided by the 75 blow Marshall specific gravity of the corresponding lot.

2. Lot

For the purposes of compliance testing, a lot shall be 300 tons of asphalt concrete placed or one day's production, as determined by the Engineer.

3. Coarse Aggregate

Portion of the mineral aggregate retained on the No. 4 sieve.

4. Fine Aggregate

Portion of the mineral aggregate retained on the No. 200 sieve and passing the No. 4 sieve.

5. Mineral Filler

Portion of the mineral aggregate passing the No. 200 sieve.

1.2 Quality Assurance

The Contractor shall provide all preliminary materials and mix design testing and the mix design report in accordance with Section 1330, Submittals. Compliance sampling and testing during construction will be provided by the Owner.

A. Reference Test Standards and Specifications

1. American Society for Testing and Materials (ASTM)

ASTM C88, Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C117, Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing

ASTM C131, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine

ASTM C136, Sieve or Screen Analysis of Fine and Coarse Aggregates

ASTM C150, Portland Cement

ASTM C183, Sampling Hydraulic Cement

ASTM C977, Specification for Quicklime and Hydrated Lime for Soil Stabilization

ASTM D75, Practice for Sampling Aggregates

ASTM D140, Practice for Sampling Bituminous Materials

ASTM D242, Mineral Filler for Bituminous Paving Mixtures

ASTM D692, Coarse Aggregate for Bituminous Paving Mixture

ASTM D946, Penetration-Graded Asphalt Cement for Use in Pavement Construction

ASTM D995, Requirements of Mixing Plants for Hot-Mixed Hot-Laid Bituminous Paving Mixtures

ASTM D1073, Fine Aggregate for Bituminous Paving Mixture

ASTM D1075, Effect of Water on Cohesion of Compacted Bituminous Mixtures

ASTM D1188, Bulk Specific Gravity of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens

ASTM D1559, Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus

ASTM D2041, Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

ASTM D2419, and Equivalent Value of Soils and Fine Aggregate

ASTM D2489, Degree of Particle Coating of Bituminous-Aggregate Mixtures

ASTM D2726, Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens

ASTM D2950, Density of Bituminous Concrete In-Place be Nuclear Methods

ASTM D3381, Viscosity-Graded Asphalt Cement for Use in Pavement Mixtures

ASTM D3515, Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures

ASTM D3549, Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimen

ASTM D3665, Random Sampling of Paving Materials

ASTM D3666, Inspection and Testing Agencies for Bituminous paving Materials

ASTM D4318, Liquid Limit, Plastic Limit, and Plasticity Index of Soils

2. The Asphalt Institute

Mix Design Methods for Asphalt Concrete
Manual No. 2 (MS-2), 1992 or its latest revision.

3. Maricopa Association of Governments (MAG), Uniform Standard Specifications for Public Works Construction, 1998 Edition (Includes revisions through 2004)

4. Arizona Department of Transportation (ADOT), Standard Specifications, 2000 Edition

B. Frequency of Testing

The following table indicates the minimum number of tests to be performed for acceptance of each lot.

Test Description	Test Method	Test Frequency
Maximum Density of Laboratory Compacted Mixture	ASTM D1559 ASTM D2726	3 test per lot
Asphalt Cement Content of Uncompacted Mixture	ASTM D2726	3 test per lot
Aggregate Gradation of Uncompacted Mixture	ASTM C136 ASTM C117	3 test per lot
In-Place Density of Compacted Mixture	Core Samples ASTM D2726 or	3 to 5 randomly distributed core samples per lot
Thickness of Compacted Mixture	ASTM D3549	3 to 5 randomly distributed core samples per lot
Temperature of Mix at Time of Placement	Field Thermometer	1 test per hot mix sample
Straight Edge	10 foot straight edge	Continuously

Sampling and testing frequencies may be reduced at the discretion of the Engineer if test results are repeatedly compliant and consistent.

Locations for sampling and in-place tests shall be in accordance with ASTM D3665. The Contractor shall provide extra tests as required by the Owner to define deficient areas at no additional cost to the Owner.

Acceptance samples shall be taken from behind the paving machine with a sampling plate in accordance with Arizona Department of Transportation test method ARIZ 104b. The acceptance laboratory and quality control laboratory shall utilize the ignition method (ASTM D6307) with the appropriate calibration/corrections applied for both gradation and binder content testing.

Three (3) cores should be used for acceptance testing if the production of the lot is less than 1,000 tons. Four (4) cores should be used for lots containing 1,000 to 1,500 tons, and Five (5) cores for lots exceeding 1,500 tons.

The density of the compacted mixture shall be determined from core samples cut from the pavement. The relative density of the finished product shall be determined by dividing the specific gravity of the core by the average Marshall specific gravity obtained for the corresponding lot.

C. Allowable Tolerances

The following table provides the tolerance for individual test results that will be allowed without adjustment to payment.

Description	Allowable Tolerance
Relative Density	-1 percent
Asphalt Cement Content	$\pm$0.3 percent

Aggregate Gradation, Job Mix Tolerances	
Aggregate Passing No. 4 Sieve or Larger	±6 percent
Aggregate Passing Nos. 8 and 30 sieves	±6 percent
Aggregate Passing 200 sieves	±2 percent
Thickness of Compacted Mixture	-1/4 inch
Temperature of Mix at Time of Placement	±25 degrees Fahrenheit
Straightedge, Finish Course	±1/4 inch

D. Acceptance

In place materials with deviations in excess of the allowable tolerances will be either removed and replaced or paid for at a reduced unit price as dictated herein. The penalties shown in the tables following are not cumulative with-in the same table.

1. Relative Density

Deviations from specifications will be based on the average values of acceptance testing performed for each lot and will be based on 95% of the Marshall Specific Gravity. When the relative density is greater or less than that specified, payment will be reduced as follows:

Deviation From Density Specifications	Reduction in Payment
0 to -1% points	0%
Greater than -1% point	- 2%
Greater than -2% points	- 5%
Greater than -3% points	- 10%
Greater than -5% points	Rejected

When the relative density deviates from that specified by more than 5 percent, remove and replace that section of asphalt concrete pavement in accordance with specifications at no additional cost to the Owner.

2. Asphalt Cement Content

Deviations from specifications will be based on the average values of acceptance testing performed for each lot. When the asphalt cement content exceeds the allowable tolerance of ±0.3 percent from the approved mix design target value, the payment will be reduced or the material rejected as follows:

Deviation From Asphalt Cement Content Target Value	Reduction in Payment
0 to ±0.3% points	0%
Greater than ±0.3% points	-2%
Greater than ±0.4% points	-5%
Greater than ±0.5% points	Rejected

3. Aggregate Gradation

When the aggregate gradation exceeds the allowable job mix tolerances, that asphalt concrete pavement will be removed and replaced in accordance with the specifications at no additional cost to the Owner**.**

4. Thickness

Deviations from specifications will be based on the average values of acceptance testing performed for each lot. Where the pavement is deficient in thickness by not more than **-1/4** inch, payment will be reduced by 25 percent. Where the pavement is deficient in thickness by more than **1/4** inch, pavement shall be rejected. In the event that an individual core is deficient in thickness by more than **3/8** inch, two additional cores will be taken, one approximately 100 feet ahead of the deficient core and one approximately 100 feet behind the deficient core. These three cores will be used to

evaluate the deficiency of that area and it will be treated as a new sub lot regarding thickness acceptance. If the new sub lot is deficient, additional cores may be needed to determine the extent of the deficiency.

Deviation From Minimum Thickness Specifications	Reduction in Payment
Spec. to - 1/8 inch	0%
Spec. minus 1/8 inch to spec minus ¼ inch	-25%
Less than Spec. minus ¼ inch	Rejected

5. Effective % Air Voids

When the percent laboratory air voids (75 blow Marshall method) exceed the allowable mix design tolerances, the following table shall be used to determine pay reduction or pavement remove and replace. Deviations from specifications will be based on the average values of acceptance testing performed for each lot.

Deviation From Target Percent Air Voids	Reduction in Payment
0 to $\pm$ 2%	Full Payment
$\pm$ 2.1% to $\pm$ 2.9%	-5%
Greater than $\pm$ 3%	Rejected

6. Straightedge

Where the finish surface deviates from a true plane as determined by using a 10-foot straightedge in excess of 1/4 inch, the surface shall be removed and replaced in accordance with these specifications with a method approved by the Owner and shall be provided at no additional cost to the Owner. The repair shall be accomplished by completely removing and replacing the section or grinding down and replacing with a minimum of 2 inch overlay. The 10-foot straightedge shall be furnished by the Contractor.

1.3 Submittals and Quality Control

A. Certificates of Compliances

1. Mineral Filler
2. Asphalt Cement
3. **ARPA plant certification**
4. **Plant scale and metering device calibration**

B. Materials Test Reports

1. Report on Coarse Aggregate
2. Report on Fine Aggregate
3. Asphalt Concrete Mix Design, include the following items in the report:

a. Name and address of laboratory and responsible party
b. Location of source of aggregate
c. Supplier, refinery and grade of asphalt cement
d. **Supplier and source of admixture**
e. Individual aggregate gradations
f. Combined aggregate gradations
g. Job mix formula
h. Aggregate and mix design test results and voids analysis
i. Recommended asphalt cement content
j. Recommended lay down temperature
k. Recommended mixing temperature
l. Complete set of calculations

B. Quality Control Testing

The Contractor is required to provide a reasonable level of quality control testing to ensure that materials incorporated into the work and plant operations achieve a product that complies with the specifications without significant numbers of failures and asphalt concrete penalties. Acceptance testing provided by the Owner is not sufficient for controlling the plant.

PART 2 - MATERIALS

The following materials shall be used in the asphalt concrete.

2.1 Aggregates

A. Coarse Aggregates

ASTM D692, except as modified herein. Hard, strong durable pieces free of coherent coatings.

1. Percentage of Wear

ASTM C131. maximum percentage of wear of 40% after 500 revolutions. ASTM C88, sodium sulfate soundness loss after 5 cycles, less than 12 percent.

2. Fractured Faces

Minimum 75 percent by weight of aggregate retained by weight on the No. 8 sieve, at least one rough angular surface produced by mechanical crushing.

B. Fine Aggregate

ASTM D1073 except as modified herein. Sand prepared from stone, crushed gravel or combinations thereof shall be used, except that natural sand not exceeding 20% of the total aggregate weight may be used. Material shall consist of hard, tough grains free of injurious amounts of clay, loam, or other deleterious substances.

1. Sand Equivalent

ASTM D2419, Greater than 50.

2. Plasticity

ASTM D4318, non-plastic.

3. Percentage of Wear

ASTM D88, sodium sulfate soundness loss after 5 cycles, less than 12 percent.

2.2 Asphalt Cement

Asphalt cement shall be performance grade asphalt conforming to the requirements of MAG Specifications, Section 711 for PG-70-10, unless otherwise specified in the plans or special provisions.

2.3 Asphalt Concrete Mixture Composition

A. Design

Design the bituminous mixture using the procedures outlined the Asphalt Institute's Manual Series No. 2 (MS-2), 1992 edition or its latest revision to the following requirements:

MARSHALL DESIGN CRITERIA (Latest Edition)	
Number of Blows	75
Stability, Pounds, Minimum	1800
Flow, 0.01 inch	8 to 16
Effective Percent Air Voids	4.0
Percent Voids in Mineral Aggregate	14 minimum
Percent Voids Filled With Asphalt	65 to 75
Asphalt Cement Content, Percent	5.2 (+/- 0.3)

B. Quality

The proposed mix shall contain a minimum of 1.0 % mineral admixture. The mineral admixture shall be hydrated lime conforming to the requirements of ASTM C-207 Type N or Portland Cement conforming to MAG section 725. , The proposed mix shall have a minimum dry strength of 250 psi and an index of retained strength of at least 60 percent, when tested in accordance with ASTM D1075.

C. Gradation

Gradation of the combined aggregates shall conform to the following table:

MINERAL AGGREGATE GRADATION (C-3/4) *	
SIEVE SIZE	PERCENTAGE BY WEIGHT PASSING
3/4"	100
1/2"	90 -100
3/8"	65-90
No. 4	45-70
No. 8	30-55
No. 30	15-35
No. 200	2-8

*** Percentages based on weight of dry aggregate and admixture.**

Provide the mineral aggregate or mineral aggregate and filler gradation specified in the previous table when tested in accordance with ASTM C136 and C117.

Provide a combined aggregate gradation within the bounds of the specified limits when plotted on an aggregate grading chart. The gradation shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be uniformly graded from coarse to fine.

The ratio of the percentage of aggregate by weight passing the No. 30 sieve to that passing the No. 8 sieve shall not exceed 65 percent.

Sand may be used to obtain the proper gradation of the aggregate blend or to improve the workability of the mix. The amount of sand to be added shall be adjusted to produce mixtures conforming to requirements of this specification.

2.4 Preservative Seal

None required.

2.5 Equipment

A. Bituminous Mixing Plant

ASTM D995, Central mixing plant, with the following changes and/or additions.

1. Inspection of Plant

Provide the Owner or his/her authorized representative access, at all times, to all parts of the plant for checking adequacy of equipment; inspecting the operation of the plant; verifying weights, proportions, and character of materials; and checking the temperatures maintained in the preparation of the mixture.

2. Calibration

The plant shall have a current certification of Hot Mix Asphalt Production Facilities by Arizona Rock Products Association. The accuracy of all scales shall be certified through a representative of the State Division of Weights and Measures at least annually. Calibrate the plant as often as required to produce the specified mixture. A copy of all certifications for weighing and metering devices shall be kept in the plant.

3. Air Quality

Provide evidence of applicable permits and/or approval from the Air Quality Section, State Division of Environmental Protection prior to beginning operations.

B. Hauling Equipment

Discharge the bituminous mixture from the surge bin directly into the hauling vehicle and transport directly to the jobsite. Stockpiling outside the surge bins and ultimately loading into the vehicle is strictly prohibited. Provide trucks for hauling bituminous mixtures with tight, clean, and smooth metal beds. To prevent the mixture from adhering, lightly coat the truck beds with a small amount of light film

of distillate or light oil. Provide a suitable cover to protect the mixture from adverse weather. When necessary to ensure that the mixture will be delivered to the site at the specified temperature, insulate truck beds and provide securely fastened covers. Trucks with belly dumps shall not be used.

When required, provide legible weigh masters certificates at the time of material delivery. The ticket shall include the following information;

Date, Supplier, Plant, Ticket Number, Truck Number, Contractor, Project, Product Code and Description, Temperature of batch, Time of batch, Material Weight.

C. Bituminous Paver

Provide self-propelled mechanical, spreading and finishing equipment with a screed or strike off assembly capable of distributing not less than twelve feet. The equipment shall produce a finished surface of the smoothness and texture required. The screed shall be adjustable to the required template and elevation. The forward speed of operation shall be regulated so that no irregularities will result, but in no case will the forward speed exceed 55 feet per minute.

Equip the paver with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line or surface through a system of mechanical sensors or sensor-directed mechanisms or devices which will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1 percent.

Equip the controls so that they are capable of working in conjunction with any of the following attachments.

1. Ski-type device of not less than 30 feet in length or as approved by the Owner.

2. Taut stringline set to grade.

3. Short ski.

D. Rollers

Provide the number and type of rollers necessary to compact the mixture to the required density while it is still in a workable condition. In no case shall there be less than one steel wheel and one pneumatic roller for production of 150 tons per hour or less. Add additional rollers as required for production of more than 150 ton per hour. Provide self propelled, reversible rollers with a minimum weight of 8 tons. Equip rollers with a device to dispense an approved releasing agent on the wheels to prevent the wheels from picking up the asphalt. When required, equip pneumatic tired rollers with skirt devices to maintain temperature during the rolling process.

1. Pneumatic Rollers

Two axle tandem type with a rolling width of at least 5 feet. Tires shall be the same size with a tread satisfactory to the Owner. The operating weight per tire shall not be less than 2000 pounds and designed so that the entire gap between the adjacent tire is covered by the following tire. Inflate each tire to 90 psi $\pm$ 5 psi.

PART 3 - EXECUTION

3.1 Preliminary Investigation of the Work

Verify that all work has been performed in accordance with these specifications prior to placing asphalt concrete pavement.

3.2 Weather Limitations

Do not place bituminous mixture upon a wet surface or when the surface temperature of the underlying course is less than 40 degrees Fahrenheit or when weather conditions otherwise prevent the proper handling and furnishing of the bituminous mixture.

3.3 Tack and Prime Coat

Apply tack and prime coat in accordance with Section 2620, Bituminous Tack and Prime Coat. Tack coat shall be required at all joints between existing and new pavement. Tack coat will not be required over native subgrade.

3.4 Mixing

According to ASTM D3515.

A. Preparation of Bituminous Material

Heat bituminous material in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixer at a uniform temperature. Deliver the bituminous material to the mixer at a temperature sufficient to provide a suitable viscosity for adequate coating of the aggregate particles. Do not exceed 340 degrees Fahrenheit.

B. Preparation of Mineral Aggregate

Dry and heat the aggregate for the mixture to the temperature designated by the job mix formula within the tolerance specified. The maximum temperature and rate of heating shall be such that no permanent damage occurs to the aggregates. The temperature shall not be lower than is required to obtain complete coating and uniform distribution of the bitumen on the aggregate particles and to provide a mixture of satisfactory workability. The aggregate moisture content shall be 1.0 percent or less at the time of mixing.

C. Preparation of Bituminous Mixture

The aggregates and the bituminous material shall be weighed or metered and introduces into the mixer in the amounts specified in the job mix formula.

Commercial mineral filler shall be added to the mixer separately and shall be thoroughly dry. If the materials are mixed in a batching plant, the filler material shall be fed directly into the mixer as near the center as possible.

The combined materials shall be mixed until the aggregate mixture is uniformly coated with bitumen. The mixing time shall be the shortest time that will produce a satisfactory mixture. It shall be established by the Supplier, based on the procedure for determining the percentage of coated particles described in ASTM D2489, and approved by the **OWNER** for each individual plant and for each type of aggregate used. The minimum mixing time shall be 25 seconds. The mixing time will be set to achieve 95 percent coated particles.

For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer.

3.5 Transporting, Spreading, and Finishing

Transport the mixture from the mixing plant to the point of use in vehicles conforming to the specified requirements. Schedule deliveries so the spreading and rolling of all mixture prepared for one day's run can be completed during daylight, unless adequate artificial lighting is provided. Do not haul over freshly placed material until the material has been compacted, as specified, and allowed to cool sufficiently to handle traffic loads.

Place the mix at a temperature no higher than necessary for placing, finishing and compacting but not less than 260 degrees Fahrenheit.

Spread the mixture to the full width with an approved bituminous paver. The lay down machine shall be capable of placing a 12-foot wide mat without a screed. Strike off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and conform to the grade and contour indicated. Regulate the speed of the paver to eliminate pulling and tearing of the bituminous mat. Begin the placement of the mixture along the centerline of a crowned section or on the high side of area with a one-way slope. Place the mixture in consecutive adjacent strips having a minimum width as specified. Offset transverse joints in adjacent lanes a minimum of 10 feet. Belly dumps shall not be used on overlay projects.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread, raked, and luted with hand tools.

Handle the mixture in such a way as to prevent segregation of the aggregate mix. Coarse float rock that develops in the process of raking shall be placed on a surface, which will receive pavement or shall be removed from the site.

Place layers of bituminous material such that the compacted thickness does not exceed 4 inches. Place layers in excess of 4 inches in successive layers of equal thickness not exceeding 4 inches. When required by the Owner, place tack coat between successive layers as specified in Section 2620, Bituminous Prime and Tack Coat.

3.6 Compaction of Mixture

The completed surfacing shall be thoroughly compacted, smooth and true to grade and cross section as indicated and be free from ruts, humps, depressions or irregularities. After spreading, thoroughly and uniformly compact the mixture by rolling. Roll the surface when the mixture has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor and as specified herein.

Compact the mixture to 96 percent of the maximum Marshall density determined in accordance with ASTM D1559 (75 blows).

Operate the roller at a sufficiently slow speed to avoid displacement of the hot mixture. Immediately correct any displacement that occurs as a result of reversing the direction of the hot roller, or from any other cause.

Furnish sufficient rollers to handle the output of the plant. Continue rolling until all rolling marks are eliminated, the surface is of uniform texture and true to grade and cross section, and the required density is obtained.

To prevent adhesion of the mixture to the roller, keep the wheel properly moistened, but excessive water will not be permitted.

In areas not accessible to the roller, thoroughly compact the mixture with hand tampers or mechanical compactors.

Remove and replace any mixture that becomes loose and broken, mixed with dirt, or is in any way defective, with fresh hot mixture and immediately compact to conform to the surrounding area. Skin patching will not be allowed.

3.7 Joints

Form all joints in such a manner as to ensure a continuous bond between old and new sections of the course. The Contractor shall make every attempt to provide joints with the same texture, density, and smoothness as adjacent sections of the course.

Longitudinal joints which are irregular, damaged, or defective shall be cut back to expose a clean, sound surface for the full depth of the course. All contact surfaces shall be given a tack coat of bituminous material prior to placing any fresh mixture against the joint.

Stagger longitudinal joints at least 6 inches in relation to the joints of the underlying course and provide a sloped joint for each course.

Do not pass over the unprotected end of the freshly laid mixture except when necessary to form a transverse joint. Construct transverse joints by placing a bulkhead or by tapering the course, in which case the edge shall be cut back to its full depth and width on a straight line to expose a vertical face. Tack coat all contact surfaces before placing any fresh mixture against the joint.

3.8 Preservative Seal

None required.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement & Payment

Measurement and payment will be made for asphalt concrete pavement as specified in Section 01210 Measurement and Payment for Asphalt Pavement Replacement.

**** END OF SECTION 2630 ****

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SECTION 02650

TRAFFIC CONTROL

PART 1 - GENERAL

1.1 Description

A. Description of Work

The work to be performed in accordance with this section includes providing flagging services and pilot trucks, and furnishing, controlling, maintaining, moving an d removing barricades, warning signs, lights, signals and pavement markings as required to provide a safe and efficient vehicular and pedestrian passage through the work zone.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all required operations to provide a complete item in accordance with the project plans and specifications.

1.2 Quality Assurance

A. Reference Test Standards and Specifications

Manual on Uniform Traffic Control Devices, latest edition. (MUTCD)

Arizona Department of Transportation (ADOT) Standard Specifications for Road and Bridge Construction, 1990.

ADOT Signing and Marking Standard Drawings.

ADOT Construction Standard Drawings.

1.3 Submittals

A. Traffic Control Plan

The **CONTRACTOR** will provide the **OWNER** a traffic control plan for each portion of the work prior to that work beginning. Changes to traffic control plans shall be submitted at least 10 days prior to performing the work.

B. Schedule

Provide complete traffic control plan schedule showing dates and times for traffic control changes that will be performed in conjunction with the work schedule, ten (10) days prior to performing the work.

C. Responsible Employees

Provide name(s) of and after phone number(s) for the employee(s) responsible for implementation and maintenance of the traffic control plan to the **OWNER** and local law enforcement agency. The employee(s) shall be available at all times to make necessary changes or repairs to the traffic control facilities as required to maintain safe traffic control in and around the construction areas.

D. Emergency Service Notification

Provide a copy of Emergency Service Notification Form. Include date and person or persons to be notified.

PART 2 - MATERIALS

2.1 General

All products, procedures and facilities shall be per MUTCD latest edition. All traffic control devices shall be high intensity.

2.2 Advanced Warning Arrow Panel

MUTCD 6E-7, 8, 9. Type B min., independent power source, minimum 12 hours between intensity.

2.3 Temporary Concrete Barriers

MUTCD 6C-10, ADOT, construction detail, C-10.14 with barricade warning lights where required.

2.4 Sand Barrel Crash Cushions

ADOT, Signing and marking details 4-C-101, 02, 03. Filled with sand with a dry unit weight of 90 to 100 lbs. per cubic foot and a moisture content less than 2 percent by weight.

2.5 Temporary Pavement Markings

A. Raised Pavement Markings

MUTCD 3A-10, ADOT Specification Section 706, temporary reflective markers, color as indicated.

B. Marking Point

ADOT Specification Section 708, color as indicated.

C. Performed Marking Tape

ADOT Specification Section 705-202.2, removable.

2.6 Sign Posts

MUTCD 6B-4, wood, steel or aluminum.

2.7 Signs, Barricades, Channelizing Devices and Lighting Devices

MUTCD, Part VI. Lighted barricades shall be properly maintained.

2.8 Flagmen

Competent, trained and supplies with a combination STOP and SLOW sign, orange vest, orange hard hat or orange cap. Provide adjacent barricading devices where required. Flagmen shall be certified as required by State law and/or local codes and ordinances.

2.9 Pilot Vehicles

Equip vehicle with at least one roof mounted flashing yellow light and appropriate vehicle signage which will inform the traffic that they are required to follow that vehicle.

2.10 Detour

Provide surfacing on detour routes as indicated on the traffic plan. Surface shall be smooth and adequately maintained to keep dust to an absolute minimum.

PART 3 - EXECUTION

3.1 General

Provide adequate protection of all vehicular and pedestrian traffic, and workmen through any and all portions of the construction zone where the construction operations interfere with, obstruct or create a hazard to the normal movement of traffic.

A. Two (2) lanes of traffic shall remain open at all times unless otherwise approved by the **OWNER**.

B. During emergency situations, the **OWNER** may provide traffic control. The cost of any traffic control provided by the Owner shall be borne by the **CONTRACTOR**.

C. In the event that any employees of Lake Havasu City are required to correct, repair, or modify any in-place traffic control provided by the **CONTRACTOR**, it shall be the responsibility of the **CONTRACTOR** to reimburse Lake Havasu City for any incurred costs.

D. The **CONTRACTOR** will coordinate his work so as not to disrupt residential trash service.

3.2 Public Notification

A. Services

Notify all Emergency and Public Service which may operate in the affected traffic area, in writing when traffic patterns are to be alerted not less than 24 hours prior to street closure. Provide each service with the name of the employee(s) responsible for traffic control maintenance.

B. News Media

At least 7 days prior to closing any street, the **CONTRACTOR** shall notify at least 2 local radio and newspaper offices. The notification shall include the locations and time periods of closures. Periodically update news organizations as required.

3.3 Traffic Control Devices

Place all necessary traffic control devices before any work is started. Move devices as necessary to keep up with the advancing operation. Place devices at the locations indicated on the traffic plan and in accordance with plan details and the MUTCD and as specified herein.

Maintain devices, keep free from dirt, mud and roadway grime. Promptly replace all damaged devices.

3.4 Removal of Existing Markings

Remove existing pavement markings by any method that does not structurally damage the pavement. The method of removal shall meet all local codes and ordinances. Markings shall not be painted out.

3.5 Temporary Pavement Markings

Place pavement markings in accordance with the traffic control plan. Remove existing pavement marking and place temporary pavement marking immediately. Use temporary traffic control devices as required to safely channel traffic until markings are complete.

3.6 Temporary Concrete Barriers

Locate and install barriers as indicated on the plans. Fasten sections of the barrier to form a continuous chain. Flare ends of the barrier back as indicated to prevent exposing barrier end to oncoming traffic. Install flashing warning lights as required.

3.7 Sand Barrel Crash Cushions

Locate and install as indicated on the plans. Remove and replace damaged crash cushions immediately. Have available on the site a sufficient number of cushions to completely replace all of crash cushions at one site.

3.8 Flagmen

Locate flagmen as indicated on the traffic control plan. Provide flagmen where traffic is required to stop or slow. Provide additional for site specific traffic control conditions.

3.9 Stopping Traffic

Traffic shall not be stopped and held longer than absolutely necessary. Traffic shall not be stopped long enough to interrupt traffic at the nearest intersection or longer than 5 minutes unless otherwise approved by the Owner.

3.10 Adjustment to the Traffic Control Plan

At any time, the **OWNER** may request that adjustments be made to the traffic control plan layout or signage. The **CONTRACTOR** shall immediately make all adjustments and provide all signage required. No additional payment will be made for adjustments to the traffic control plan.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No measurement will be made for this item.

4.2 Payment

Payment will be made at the contract lump sum price bid for traffic control and shall be considered full payment for providing the labor and materials and perform this work.

See Section 00310 Bid Schedule for Bid Items.

END OF SECTION

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General Decision Number: AZ140038 03/14/2014 AZ38

State: Arizona

Construction Type: Heavy

Counties: Apache, Cochise, Gila, Greenlee and La Paz Counties in Arizona.

HEAVY CONSTRUCTION, Includes Water and Sewer Lines, Heavy Construction on Treatment Plant Sites and Pipeline Construction

Modification Number	Publication Date
0	01/24/2014
1	03/07/2014
2	03/14/2014

BOIL0627-004 01/01/2013

	Rates	Fringes
BOILERMAKER	$ 32.51	26.16

ELEC0570-013 12/01/2013

	Rates	Fringes
ELECTRICIAN	$ 24.20	18%+5.00

ZONE DEFINITIONS-

Zone A: the area within a twenty-nine (29) mile radius from a basing point at the Tucson Town Hall.
Zone B: 29 to 46 mile radius from the town hall in Tucson- an additional $ 1.25 per hour
Zone C: 47 mile radius from the town hall in Tucson to the outer limits of the geographic jurisdiction- an additional $ 3.75 per hour

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IRON0433-001 01/01/2014

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 33.50	26.8

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* LABO0383-006 11/01/2013

	Rates	Fringes
LABORER		
GROUP 4		
Jackhammer	$ 20.51	4.35

SUAZ2012-026 05/17/2012

	Rates	Fringes

LABORER: Common or General.....$ 15.65 0.00

LABORER: Pipelayer.....$ 20.00 0.00

OPERATOR: Loader (Front End)....$ 20.23 6.31

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 22.70 0.00

TRUCKDRIVER.....$ 21.00 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage

payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION