



**CONTRACT DOCUMENTS**  
**FOR**  
**CITY OF SEDONA**  
**PUBLIC WORKS DEPARTMENT**

**SR 179 Pedestrian Crossing at Oak Creek,**  
**2022 SIM-4C PCOC**

**City of Sedona**  
**SR 179 PEDESTRIAN CROSSING AT OAK CREEK**

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**City of Sedona  
Public Works Department  
102 Roadrunner Drive  
Sedona, AZ 86336**

Sealed bids for the construction of the **SR 179 Pedestrian Crossing at Oak Creek** will be received by the Public Works Department, located at 102 Roadrunner Drive, Sedona, Arizona, until **2:30 P.M. local time, March 7, 2023.** At that time, bids will be publicly opened and read aloud in the Public Works Echo Conference Room. Bidders are invited, but not required, to be present at the bid opening.

**PROJECT: SR 179 Pedestrian Crossing at Oak Creek**

**DESCRIPTION:** The project involves the construction of a 10-12 foot concrete shared use pathway under the existing SR 179 Oak Creek bridge, with ramps running parallel to SR 179 on each side of the roadway.

The proposed improvements will include:

- 640'+/- of concrete pathway passing under the Oak Creek Bridge connecting both the north and south sidewalks of SR 179.
- Construction of approximately 3,200 square feet of reinforced concrete retaining wall.
- Channel excavation and bank stabilization.
- Decorative landscaping/hardscape improvements.
- Installation of pavement marking and signing related to the pathway.
- Pedestrian channelization and signage along SR 179 around the crossing.
- Pedestrian wayfinding signage and pavement marking.
- Protection and preservation of existing tree vegetation.

**CONTRACT TIME: 270 calendar days after the Notice to Proceed.**

**LIQUIDATED DAMAGES: \$710 per day beyond the 270 calendar day Contract Time.**

Copies of the Contract Documents, including plans and specifications for use in preparing bids may be obtained from the Public Works Department, 102 Roadrunner Drive, Sedona, Arizona (Phone 928-204-7111; FAX 928-282-5348). The required deposit per set of plans and specifications is \$50.00, which will be refunded to those listed plan holders not submitting bids, if returned in good and useable condition within seven (7) days after the bid opening. Contract Documents may also be downloaded from the City of Sedona's website at [www.SedonaAz.gov](http://www.SedonaAz.gov) under Business, Doing Business, Bids & RFPs. Downloaded documents may not be returned to the City of Sedona for any deposited refund. If plan documents are downloaded, the City will not be responsible for providing up-to-date information through the website or other communication methods.

**PRE-BID CONFERENCE:** Pre-bid conference (non-mandatory) will be held on **February 23, 2023, at 11:00 A.M. at City of Sedona, Vultee Conference Room, 102 Roadrunner Drive, Sedona, Arizona.**

Each bidder's proposal shall be made on forms furnished in the Contract Documents and must be accompanied by a security consisting of a certified check, cashier's check, or bid bond in an amount of not less than ten percent (10%) of the amount of the total bid amount, and made payable to the CITY OF SEDONA, ARIZONA. In the event the successful Bidder, within ten (10) calendar days after award of the Contract, fails to enter into a Contract or fails to post payment and performance bonds satisfactory to the City insuring the faithful fulfillment of the Contract as required by law, the security deposit on this bid shall be forfeited to the City.

Contract Documents, with completed Bid Proposal, must be enclosed in a sealed envelope, addressed to:

**HAND DELIVERED:** City of Sedona  
Public Works Department  
102 Roadrunner Drive  
Sedona, AZ 86336

**U.S. MAIL:** City of Sedona  
Public Works Department  
102 Roadrunner Drive  
Sedona, AZ 86336

**AND MARKED:** Bid Proposal for **SR 179 Pedestrian Crossing at Oak Creek**

**AND RECEIVED:** **At the Public Works Department until 2:30 P.M. local time, March 7, 2023**  
(as determined by reference to [www.time.gov](http://www.time.gov) ref Arizona area).

The successful Bidder will be required to furnish two (2) bonds. One (1) bond, to become effective upon award of the Contract, shall be a Performance Bond substantially in the form attached, and shall be in a sum of one hundred percent (100%) of the contract price including any additions to the Contract. The Bond shall be effective throughout the construction period, including a two (2) year warranty period. The successful Bidder shall also furnish a Labor and Material Payment Bond, substantially in the form attached, to become effective upon award. Said Labor and Material Bond shall be in the amount of one hundred percent (100%) of the Contract price.

The successful Bidder will be determined on the basis of the lowest responsive and responsible Proposal. The City of Sedona, Arizona reserves the right to reject any or all Proposals, to waive or not to waive any informalities, or irregularities in the Proposals received, and to accept a Proposal, which in its judgment, best serves the interests of the City.

All questions should be directed in writing to Robert J. Welch PE, Associate Engineer, 102 Roadrunner Drive, Sedona, Arizona 86336, or email [BWelch@sedonaaz.gov](mailto:BWelch@sedonaaz.gov).



FIRST ADVERTISEMENT: **February 15, 2023**

SECOND ADVERTISEMENT: **February 22, 2023**

**RED ROCK NEWS**

BY:



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J. Andy Dickey, PE

Assistant City Manager and Director of Public Works/City Engineer

## INFORMATION FOR AND INSTRUCTIONS TO BIDDERS

The City of Sedona herein referred to as the "City" is defined as the City of Sedona, acting through its legally constituted officials, officers, and employees. The City may waive any informality or reject any or all bids. Any bid may be withdrawn prior to the scheduled time and date for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be opened. No Bidder may withdraw a bid within forty-five (45) days after the actual day of the opening thereof.

**Bid prices shall include everything necessary for the completion of the work including but not limited to, materials, equipment, tools, other facilities, management, superintendents, labor, services, insurance, overhead, profit, and Federal, State, and Local taxes.**

Each bid must be submitted on the Bid Proposal provided and must be signed by the Bidder or his duly authorized agent. All blank spaces for bid prices must be filled in, in ink or typewritten, IN BOTH WORDS AND NUMBERS where called for in the Bid Proposal. If there is a discrepancy between the price in words and the price in numbers, the price in words will govern.

In case of an error in the extension of the unit price and the total, the unit price shall govern. In the event that the product of a unit price and an estimated quantity does not equal the extended amount quoted, the unit price shall govern, and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two (2) or more items in the bid schedule does not equal the total amounts quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid. The bid shall not contain recapitulations of the work to be done.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, Bidder's address, and the name of the project for which the bid is submitted.

The City may, by statements in the Special Provisions or other part of the specifications, require submission of sealed Bid Documentation.

The City may make such investigations as City deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the City all such information and data for this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the City that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

Bidders must correctly prepare and submit the documents listed below with their bids:

1. Bid proposal
2. Bid Guaranty Bond
3. Certification of the Bidder's experience and qualification and Statement of Bidder's Qualifications
4. List of all proposed Subcontractors
5. Schedule of manufacturers and suppliers, major equipment and material items

6. Non-collusion affidavit
7. Certificate of insurability
8. Signed Addenda

Each bid must be accompanied by either a certified check made payable to the City of Sedona, a cashier's check made payable to the City of Sedona or a bid bond, duly executed by the Bidder as principal and having as surety thereon a surety company licensed to do business in Arizona, in the amount of ten percent (10%) of the bid. The City may retain such checks or bid bonds, of the three (3) apparent lowest Bidders, for a period of forty-five (45) days after the bid opening.

Simultaneously with the delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this Contract and for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions included herein. The surety on such bond or bonds or contract bonds must file with each bond a certified and effectively dated copy of their Power of Attorney.

Each Bidder shall have listed, on the form entitled "Proposed Subcontractors", provided in the Proposal, the name, address, and description of the work of each Subcontractor to whom the Bidder proposes to sublet portions of the work in excess of one and one-half percent (1.5%) of the total amount of his Bid. For the purpose of this paragraph, a Subcontractor is defined as one who contracts with the Contractor to provide materials and labor, labor only, or who specially fabricates and installs a portion of the work or improvement according to drawings contained in the Contract Documents. Failure to list Subcontractors may render a Bid non-responsive and may be grounds for rejection of the Bid. Attention is called to the General Conditions Article 13, limiting the total amount of the work, which may be performed by Subcontractors. Alternate Subcontractors for the same work shall not be listed in the bid. However, substitute Subcontractors may be considered as long as they comply with the requirements of these Contract documents.

Subcontractors listed by the Bidder must be competent and experienced in the type of work which they are to perform. No Contractors shall be required to employ any Subcontractor, other person or organization against which he has reasonable objection.

As evidence of his competency to perform the work, Bidder shall complete and submit with his Bid the Bidder's Statement of Qualifications which is bound in the Contract Documents. Low Bidders may be asked to furnish additional data to demonstrate competency. Bidders must be, at the time of bidding and throughout the period of the Contract, licensed as required by the State of Arizona, thoroughly competent, and capable of satisfactorily constructing the Project. Bidder shall certify that he is skilled and regularly engaged in the general class and type of work called for in the Contract Documents. Additionally, Bidders shall comply with all provisions of Arizona Revised Statutes, Title 32, Chapter 10. Further, the Bidder certifies that he is knowledgeable of the unusual and peculiar hazards associated with the general class and type of work required to construct the specific project within the terms given in the Contract Documents. Bidder shall be competent and skilled in the protective measures necessary for the safe performance of the construction work with respect to such unusual and peculiar hazards.

The selected Bidder, upon Bidder's failure or refusal to execute and deliver the Contract and bonds required within ten (10) consecutive calendar days from and including the date Bidder received notice of the acceptance of his bid, shall forfeit to the City, for such failure or refusal, the security deposited with his bid.

Bidders are required prior to submitting a bid to inspect the site of the work and satisfy themselves by personal examination or by such other means as they may prefer, as to the location of the proposed work, and of the actual conditions.

Entrance by Bidders to the site of the work for purposes of making exploratory excavations shall be by special arrangement with the City Engineer under conditions established by the City. If, during the course of such an examination, a Bidder finds facts or conditions which appear to be in conflict with the Contract Documents, the Bidder must notify the City Engineer and may apply to the City Engineer, in writing, for additional information and explanation before submitting its bid.

Any information provided by the Design Engineer, the City, or any City personnel is not intended to be a substitute for, or a supplement to the independent verification by the Bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the Bidder. Bidder acknowledges that he has not relied upon City, City personnel, or Design Engineer furnished information regarding site conditions in preparing and submitting a bid hereunder. The Plans show conditions as they are believed to exist, but it is not intended nor is it to be inferred that the conditions as shown therein constitute a representation by the City or any of its officers that such conditions actually exist, nor shall the City or any of its officers be liable for any loss sustained by the Contractor as a result of any variance between any conditions as shown on the Plans and the actual conditions revealed during the progress of the project, or otherwise.

Any subsurface investigations, which may have been conducted at the site of the work, and the corresponding report, may be examined at the City office. Soil investigations, if performed, were conducted for design purposes, and the data shown in the reports are for subsurface conditions found at the time and location of the investigation.

The City disclaims responsibility for the interpretation by Bidders of data, such as projecting or extrapolating from the test holes to other locations on the site of the work, soil bearing values and profiles, soil stability and the presence, level and extent of underground water for subsurface conditions during construction operations.

The lands upon which the work is to be performed, right of way for access thereto, and other lands designated for use by the Contractor in performing the work are identified in the Supplemental Conditions or Drawings.

Submission of a bid by the Bidder shall constitute acknowledgement that, if awarded the Contract, the Bidder has relied and is relying on his own examination of (1) the site of the work, (2) access to the site, and (3) all other data and matters requisite to the fulfillment of the work and on his own knowledge of existing facilities on and in the vicinity of the work to be constructed under the Contract.

The Bidders shall examine carefully the Plans and Specifications and the site of the proposed Project and shall solely judge for themselves the nature and location of the work to be done and all the conditions; and the submission of a Bid shall be deemed as conclusive evidence that a Bidder has made the necessary investigation and is prima facie evidence that he is satisfied with the conditions to be encountered, quantity and quality of the work or materials to be performed or furnished, and the requirements and provisions of the Plans and Specifications and the Contract Documents. The Bidder agrees that if he is awarded the Contract he will make no claim against the City, the City Engineer, or any other City officials or City personnel based on ignorance or misunderstanding of any of the provisions of the Contract Documents, nor because of any unforeseen subsurface conditions except in the manner and under the circumstances as provided in the Contract Documents.

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.

All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction for 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.

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any Bidder orally. Every proper request for such interpretation shall be made in writing, and to be given consideration must be received at least five (5) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the Contract Documents which, if issued, will be emailed to all prospective Bidders (at the respective addresses furnished for such purposes), not later than three (3) calendar days prior to the date fixed for the opening of bids. At any time prior to an announced bid opening time, the City reserves the right to issue an addendum extending the bid opening time by one (1) or more days. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligations under his bid as submitted. All Addenda so issued shall become part of the Contract Documents. It shall be the responsibility of each Prospective Bidder to verify that each addendum has been received applicable to the project. Bidders are responsible to check the City website at [www.sedonaaz.gov](http://www.sedonaaz.gov) periodically to verify if new addenda have been posted and shall ensure a reliable and accurate email address is provided to the City to be added to the Plan Holder's List. In order to be added to the Plan Holder's List, a bidder submit a request from the email address intended to be used as the bidder's contact email address, to the project manager listed on page I-3.

Before submitting a Proposal, Bidders shall carefully examine the Plans, read the specifications and all other Contract Documents, visit the site of the project, and fully inform themselves as to all existing and local conditions and limitations. It is expressly stipulated that the drawings, Specifications and other Contract Documents set forth the requirements as to the nature of the work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent upon the method of performance.

Submission of a bid shall constitute acknowledgment, upon which the City may rely that the Bidder has thoroughly examined and is familiar with the Contract Documents. Failure or neglect of a Bidder to examine any of the Contract Documents shall in no way relieve him from any obligation with respect to his bid or to the Contract. No claim for additional compensation will be allowed which is based on a lack of knowledge of the work, or of the Contract Documents.

The quantities of the various classes of work to be done and material to be furnished under this Contract, which have been estimated as stated in the Proposal, are only approximate and are to be used solely for the purpose of comparing, on a consistent basis, the Proposals offered for the work under this Contract. The Contractor agrees that the City will not be held responsible if any of the quantities shall be found incorrect; except that in the event that the Contract price may be increased or decreased in accordance with Article 30 of the General Conditions through the issuance of the appropriate change orders to reflect the actual quantities of all items constructed, installed or incorporated in the work, the Contractor will not make any further claim for damages or for loss of profits because of a difference between the quantities of the various classes of work as estimated and the work actually done. If any error, omission, or misstatement is found to occur in the estimated quantities, the same shall not invalidate the Contract or release the Contractor from the execution and completion of the whole or any part of the work in accordance with the Specifications and the Plans herein mentioned, and for the prices herein agreed upon and fixed therefore, or excuse him from any of his obligations or liabilities hereunder, or entitle him to any damages or compensation except as may be provided in this Contract.

The successful Bidder, upon award of a Contract, shall commence work on the date specified in the "Notice to Proceed" and shall complete all work in accordance with the time schedule specified. Should the Contractor fail to complete all work in the allotted time period, liquidated damages shall be assessed as specified.

The City invites bids on the forms included as part of this Document to be submitted at such time and place as is stated in the Advertisement for Bids. All blanks in the Bid Proposal must be appropriately filled in with typewriter or ink. **Bidders are instructed not to turn in Bid Proposals that have been separated from the bound Contract Documents. It is the sole responsibility of the Bidder to see that the bid is received in proper time at the time and place stipulated in the Advertisement For Bids.** Any bids received after the scheduled closing time for receipt of bids will be returned to the Bidder unopened.

The bid must be signed in the name of the Bidder and must bear the signature in long hand of the person or persons duly authorized to sign the bid. Changes in or additions to the bid forms, recapitulations of the work bid upon, alternative proposals or any other modifications of the bid which are not specifically called for in the Contract Documents may be subject to City's rejection of the bid as not being responsive to the advertisements. No oral telephone modifications or telegraphic modifications of any bid submitted will be considered.

The bid submitted must not contain erasures, corrections or changes from the printed forms as completed in typewriter or ink, unless such erasures, corrections or changes are authenticated by affixing in the margin immediately opposite the erasure, correction or change, the full signature of the person who signed the bid or the signature of such other person as may be authorized by the Bidder to make erasures, corrections or changes in the bid, and said

authorization must be evidenced by written confirmation, executed by the person authorized to sign the initial bid, attached to the bid at the time of submittal.

If the bid is made by an individual, his or her name, signature, and post office address must be shown; if made by a firm or partnership, the name and post office of the firm or partnership, a list of the partners, and the signature of at least one of the general partners must be shown; if made by a corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation, and the title of the person who signs on behalf of the corporation. All signatures must be made in long hand. If a corporation makes the bid, a certified copy of the By-laws or resolution of the board of directors of the corporation shall be furnished showing the authority of the officer signing the bid to execute contracts on behalf of the corporation. If the bid is made by a joint venture, a representative of each of the joint venture firms shall sign the bid. Additionally, the bid shall include a copy of the resolution or agreement empowering the representative to execute the bid and bind the firm to the joint venture.

The City reserves the right to pre-qualify all bids, post-qualify all bids, or reject all bids, not to make an award or accept the Proposal deemed most advantageous and in the best interest of the City. The City shall enter into a Contract with the lowest responsible responsive bidder whose proposal is satisfactory. A written Notice of Award will be sent to the successful Bidder(s).

OR APPROVED EQUAL CLAUSE -- Manufacturers or suppliers of materials and equipment may request that alternatives to specified products be considered equal and that inclusion of such alternatives be permitted in the bids. Such request must be made in writing and received by the City Engineer at least five (5) calendar days prior to the date bids are to be received. Granting a request that an alternative product be considered equal to those specified may be made only by the issuance of an Addendum by the City. Denial of the request during bidding does not waive the manufacturer's or supplier's right to offer the alternative product to the Contractor after Award of the Contract. After Award of Contract, the offer will be considered as a substitution as provided under Article 6 of the General Conditions and will be considered only if the Engineer believes the offer of substitution is equal to or superior in quality to the specified product.

#### **PREPARATION OF BID**

- A. City reserves the right to reject any or all Bids, to waive any or all informalities, and the right to disregard all nonconforming, non-responsive or conditional Bids.
- B. City reserves the right to reject any Bid not accompanied by specified documentation and Bid security.
- C. City reserves the right to reject any Bid if it shows any omissions, alterations of form, additions not called for, conditions or qualifications, or irregularities of any kind.
- D. City reserves the right to reject any Bid that, in his sole discretion, is considered to be unreasonable as to the amount Bid for any lump sum or unit price item.

- E. A Bidder may withdraw his Bid before the time fixed for the opening of Bids by communicating his purpose in writing to the City. Upon receipt of such written notice, the unopened Bid will be returned to the Bidder.
- F. The withdrawal of a Bid does not prejudice the right of a Bidder to file a new Bid, so long as the new Bid is submitted in conformance with the Information for and Instructions to Bidders prior to the closing time indicated for Bids in the Advertisement for Proposals.
- G. No Bidder may withdraw his Bid for forty-five (45) days after the time established for receiving Bids or before the Award and execution of the Contract unless the Award is delayed for a period exceeding forty-five (45) calendar days. The Award of the Contract to one party does not constitute a waiver of this condition.
- H. In evaluating Bids, City will consider the qualifications of Bidders; whether or not the Bids comply with the prescribed requirements; the alternatives, if any; the time or times for completion as stated in the Bid Form; and the lump sum and unit prices, if requested in the Bid Form.
- I. City may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work for which the identity of Subcontractors and other persons and organizations must be submitted.
- J. City may conduct such investigation deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the work in accordance with the Contract Documents. City reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to City's satisfaction.
- K. Modification of a Bid already received will be considered only if the modification is received prior to the time established for receiving Bids. Modifications shall be made in writing, executed, and submitted in the same form and manner as the original Bid. The communication should not reveal the Bid Price, but should provide the addition or subtraction or other modifications so that the final price or terms will not be shown until the sealed Bids are opened.



## CONSTRUCTION CONTRACT

THIS CONTRACT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between the City of Sedona, Arizona, an Arizona municipal corporation, hereinafter called the "City", and **Click here to enter text.**, hereinafter called the "Contractor."

WITNESSETH:

WHEREAS, the City has caused Contract Documents to be prepared for the construction of the **(the "Project")**, City of Sedona, Arizona, as described therein; and

WHEREAS, the Contractor has offered to perform the proposed work in accordance with the terms of the Contract; and

WHEREAS, the Contractor, as will appear by reference to the minutes of the proceedings of the City Council was duly awarded the work.

NOW, THEREFORE, the parties hereto hereby stipulate, covenant and agree as follows:

1. The Contractor promises and agrees to and with the City that it shall perform everything required to be performed and shall provide and furnish all the labor, materials, necessary tools, expendable equipment, and all utility and transportation services required to perform and complete in a workmanlike manner all of the work required in connection with construction of the Project all in strict accordance with the Specifications and Drawings, including any and all Addenda, and in strict compliance with the Contractor's Proposal and all other Contract Documents, which are a part of the Contract; and the Contractor shall do everything required by this Contract and the other documents constituting a part thereof.
2. The Contractor agrees to perform all of the work described above in accordance with the Contract Documents and comply with the terms therein for the initial estimated Contract price of \$ \_\_\_\_\_, subject to increase or decrease in accordance with the Contract Documents, and the Bid Schedule set forth therein; and the City agrees to pay the Contract Prices in accordance with the Bid Schedule for the performance of the work described herein in accordance with the Contract Documents.
3. The Contractor and the City agree that the terms, conditions, and covenants of the Contract are set forth in the Contract Documents and the Plans and Technical Specifications, and the Drawings numbered \_\_\_\_\_, all defined as the Contract Documents, and by this reference made a part hereof as if fully set forth herein.
4. The Contractor and the City agree that each will be bound by all terms and conditions of all of the Plans and Technical Specifications, and Contract Documents, as if the same were fully set forth herein, and hereby incorporate all of the foregoing into this Agreement.
5. The Contractor shall abide by all the laws of the United States of America, State of Arizona, Coconino/Yavapai Counties, and the City of Sedona, including a requirement that Contractor obtain an annual Sedona Business License for every year that they do business with Sedona or within the City limits.
6. The Contractor shall carry Workers' Compensation Insurance and require all Subcontractors

to carry Workers' Compensation Insurance as required by the Law of the State of Arizona, and all other insurance as set forth in the General Conditions.

7. Contractor, its agents, employees, and subcontractors, shall not discriminate in any employment policy or practice. "Discrimination" means to exclude individuals from an opportunity or participation in any activity or to accord different or unequal treatment in the context of a similar situation to similarly situated individuals because of race, color, gender, gender identity, sexual orientation, religion, national origin or ancestry, marital status, familial status, age, disability, or veteran status. (Ordinance 2015-10 (2015)).
8. As applicable, Contractor certifies and agrees it is not currently engaged in and for the duration of the Agreement will not engage in a boycott of Israel, as that term is defined in A.R.S. §35-393 and will not use forced labor or goods or services produced by forced labor of ethnic Uyghurs in the People's Republic of China (PRC) or any contractors, subcontractors or suppliers that use forced labor or goods or services produced by forced labor of ethnic Uyghurs in the PRC as provided by A.R.S. §35-394.
9. Work under this Contract shall commence on the date specified in the written Notice to Proceed from the City to the Contractor. Upon receipt of said Notice, the Contractor shall diligently and continuously prosecute and complete all work under this Contract within the time specified on page A-2.
10. The Contract Document consist of the following component parts, all of which are a part of this Contract whether herein set out verbatim, or attached hereto:

Advertisement for Bids  
Information for and Instructions to Bidders  
Bid Proposal and Bid Guaranty Bond  
Contract (this document)  
Change Orders  
Addenda  
Performance Bond, Labor and Material Payment Bond  
Special Conditions  
General Conditions  
Technical Specifications  
Notice of Award  
Notice to Proceed  
Plans and Drawings  
Design Reports  
Standard Specifications  
Insurance Certificates

The above-named documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, the order of precedence is as follows:

1. Change Orders
2. Contract (this document), including addenda
3. Payment and Performance Bonds

4. Advertisement for Bids
5. Information for and Instructions to Bidders
6. Notice of Award
7. Notice to Proceed
8. Special Conditions
9. Bid Proposal
10. Technical Specifications
11. Plans and Drawings
12. General Conditions
13. Bid Guaranty Bond
14. Standard Specifications

In the event there is a conflict between any of the above listed documents, the provision of the document with the lower numerical value shall govern those documents with a higher numerical value. Within a category, the last in time is first in precedence.

**The Contractor shall not take advantage of any apparent error or omission in the Plans or Specifications.** In the event the Contractor discovers such an error or omission, he shall immediately notify the City. The City will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Plans and Specifications.

11. As part of the inducement for City to enter into this Agreement, Contractor makes the following representations:
  - A. Contractor has familiarized himself with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress, or performance of the work.
  - B. Contractor has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or those reports that otherwise may affect cost, progress or performance of the work, which were utilized by Design Engineer in the preparation of the Drawings and Specifications and which have been identified in the Contract Documents.
  - C. Contractor has made or caused to be made examinations, investigations and tests, and studies of such reports and related data as he deems necessary for the performance of the work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes.
  - D. Contractor has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
  - E. **Contractor has given the City Engineer written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents** and the written resolution thereof by City Engineer is acceptable to Contractor.

F. Contractor has attended mandatory pre-bid meetings and walk-throughs.

12. No assignment by a party hereto of any rights under or interest in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
13. City and Contractor each bind itself, its partners, successors, assigns and legal representatives to the other party hereto, and its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
14. Pursuant to Arizona Revised Statutes Section 38-511, the provisions of which are incorporated by reference as if fully set forth herein, all parties are hereby given notice that this Agreement is subject to cancellation by the City if any person significantly involved in initiating, negotiating, securing, drafting, or creating the Contract or Contract Documents on behalf of the City is, at any time while the Contract or Contract Document or any extension thereof is in effect, an employee or agent of any other party to the Contract or Contract Documents in any capacity or a consultant to any other party to the Contract or Contract Documents with respect to the subject matter of the Contract or Contract Documents.
15. Every payment obligation of the City under this Agreement is conditioned upon the availability of funds appropriated or allocated for payment of such obligation. If funds are not allocated and available for the continuance of this Agreement, this Agreement may be terminated by the City at the end of the period for which funds are available. No liability shall accrue to the City in the event this provision is exercised, and City shall not be obligated or liable for any future payments or for any damages resulting from termination under this provision.
16. During the performance of this Agreement, Contractor may also be under contract with the City for performance of work on other projects. A breach in the performance of any of Contractor's obligations under this Agreement shall constitute a breach of Contractor's obligations under any other agreement with the City and the breach by Contractor under other agreement with the City shall also constitute a breach of Contractor's obligations under this Agreement. The City may offset any amounts owed by Contractor under any such other agreement from any amounts owed to Contractor under this Agreement.
17. The Contract Documents constitute the entire Agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement which shall be deemed an original on the date first above written.

**CITY: City of Sedona, Arizona**

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

(SEAL)

ATTEST:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

**CONTRACTOR:**

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

(SEAL)

ATTEST:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

**APPROVED AS TO LEGAL FORM:**

BY: \_\_\_\_\_

(City Attorney)

DATE: \_\_\_\_\_

**STATUTORY BID BOND**  
PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 1  
OF THE ARIZONA REVISED STATUTES

(This bond must not be less than ten percent (10%) of the bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned \_\_\_\_\_, (hereinafter "Principal"), as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal offices in the City of \_\_\_\_\_, (hereinafter "Surety"), as Surety, are held and firmly bound unto the City of Sedona, the State of Arizona, (hereinafter "Obligee"), in the amount of \_\_\_\_\_ (Dollars) (\$\_\_\_\_\_), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for

**SR 179 Pedestrian Crossing at Oak Creek**

NOW, THEREFORE, if the Obligee accepts the proposal of the Principal and the Principal enters into a contract with the Obligee in accordance with the terms of the proposal and gives the bonds and certificates of insurance as specified in the Contract Documents 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 the section to the extent as if it were copied at length herein.

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
PRINCIPAL

\_\_\_\_\_  
Seal

By: \_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_  
AGENCY OF RECORD

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
Seal

\_\_\_\_\_  
AGENCY ADDRESS

(Attach Power of Attorney form)

**STATUTORY BID BOND**  
(Check to accompany bid)

(Note: The following form shall be used when a check accompanies bid)

Accompanying this proposal is a Cashier's Check payable to the order of the City of Sedona hereinafter referred to as "City," for **SR 179 Pedestrian Crossing at Oak Creek** in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), this amount being ten percent (10%) of the total amount of the Bid. The proceeds of this check shall become the property of said City provided this proposal shall be accepted by said City through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Performance and Payment Bonds and proof of insurance coverage within the stipulated time; otherwise, the check shall be returned to the undersigned. The proceeds of this check shall also become the property of the City if the undersigned shall withdraw his bid within the period of forty-five (45) days after the date set for the opening thereof, unless otherwise required by law, and notwithstanding the award of the Contract to another Bidder.

\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
Bidder

(NOTE: If the Bidder desires to use a bond instead of a check, the Bid Bond Form on the previous two (2) pages shall be executed -- the sum of this bond shall not be less than ten percent (10%) of the total amount of this Bid.)



**STATUTORY PERFORMANCE BOND**  
PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 2,  
OF THE ARIZONA REVISED STATUTES

(This Bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_ (hereinafter "Principal"), as Principal,  
and \_\_\_\_\_, a corporation organized  
and existing under the laws of the State of \_\_\_\_\_ with its principal office in the City  
of \_\_\_\_\_, (hereinafter "Surety"), as Surety, are held and firmly bound unto the  
City of Sedona, State of Arizona, (hereinafter "Obligee") in the amount of \$ \_\_\_\_\_  
\_\_\_\_\_ (Dollars) (\$ \_\_\_\_\_) for the payment whereof, the  
said 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  
\_\_\_\_\_, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ to  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ 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 THIS 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 to the Surety, and during the life of any guaranty 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 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 \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
PRINCIPAL Seal

By: \_\_\_\_\_

Title: \_\_\_\_\_

AGENCY OF RECORD

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

AGENCY ADDRESS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
SURETY SEAL

By: \_\_\_\_\_

(Attach Power of Attorney Form)

**STATUTORY PAYMENT BOND**  
PURSUANT TO  
TITLE 34, CHAPTER 2, ARTICLE 2,  
OF THE ARIZONA REVISED STATUTES

(This Bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_ (hereinafter "Principal"), as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ with its principal office in the City of \_\_\_\_\_, (hereinafter "Surety"), as Surety, are held and firmly bound unto the City of Sedona, State of Arizona (hereinafter "Obligee") in the amount of \_\_\_\_\_ (Dollars) (\$ \_\_\_\_\_) for the payment whereof, the said 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 \_\_\_\_\_, 20\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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 THIS 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 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, of the Arizona Revised Statutes, 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 \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
PRINCIPAL Seal

By: \_\_\_\_\_

Title: \_\_\_\_\_

AGENCY OF RECORD

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

AGENCY ADDRESS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
SURETY SEAL

By: \_\_\_\_\_

(Attach Power of Attorney Form)

DO NOT DETACH AND SUBMIT SEPARATE FROM OTHER CONTRACT DOCUMENTS

### **BID PROPOSAL**

City of Sedona:

The undersigned Bidder, having examined the specifications, drawings and all other documents contained in the Contract Documents, attended all mandatory pre-bid meetings, and having examined the site where the work is being performed, and having familiarized himself with any local conditions affecting the work and having knowledge of the cost of work at the place where the work is to be done, hereby proposes to execute and perform the formal Contract set forth in these Contract Documents, of which this Proposal forms a part, and will do the work therein described on the terms and conditions therein set forth; and furnish all required labor, materials, tools, equipment, transportation and services for said work, and pay all taxes and other incidental costs, all in strict conformity with the drawings and specifications forming a part of the Contract Documents for the Unit Prices entered based on the Bidding Schedule included herein, said prices to only be amended or altered in accordance with the Contract Documents.

It is understood that any listed quantities of work to be done at unit prices are **approximate** only, and are intended to serve as a guide in evaluating bids.

It is further agreed that any quantities of work to be done at unit prices and material to be furnished may be increased or decreased as may be considered necessary, in the opinion of the City, to complete the work fully as planned and contemplated and that all quantities of work, whether increased or decreased, are to be performed at the unit prices set forth in the Bid Schedule, except as otherwise provided for in the Contract Documents.

It is further agreed that payments may be increased to cover additional work ordered by the City, but not shown on the Plans or required by the Specifications in accordance with General Condition No. 47. Similarly, payments may decrease if work is deleted or changed.

By submitting a bid, the Bidder acknowledges the understanding that the bid process is solely intended to serve the public interest in achieving the highest quality of services and goods at the lowest price, and that no right, interest, or expectation shall vest or inure to the benefit of Bidders as a result of any reliance or participation in the process.

In submitting this Proposal, it is understood that the right is reserved by the City to reject any or all Proposals and waive informalities or irregularities in Proposals. The City also reserves the right to delay the award of a contract for a period not to exceed forty-five (45) days from the date of the opening of bids.

The undersigned Bidder further agrees, if awarded the contract for the work included in this Proposal, to begin and to complete and deliver the work contemplated in accordance with all the conditions set forth in the Contract Documents.

The undersigned Bidder has carefully checked the figures inserted by him and understands that they are the Bidder's sole responsibility, and the City will not be responsible for any errors or omissions on the part of the undersigned Bidder in preparing this Proposal although City may

check and correct mathematical accuracy in evaluation of the bids.

The undersigned Bidder certifies that this Proposal is genuine, not collusive, or made in the interest or behalf of any person not named as provided in the Information for and Instructions to Bidders, and that the undersigned has not, directly, or indirectly, induced or solicited any other Bidder, or induced any other person, firm, or corporation to refrain from submitting a proposal, and the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other Bidder.

Attached is a certified check without endorsement and with conditions payable to the City of Sedona in the sum of ten percent (10%) of the total bid drawn on a bank which is a member of Federal Reserve System or which is a member of the Federal Deposit Insurance Corporation, or a cashier's check for ten percent (10%) of the total bid or a Bid Bond written by an approved surety company for ten percent (10%) of the total bid.

The undersigned submits a bid bond pursuant to Section 34-201, Arizona Revised Statutes, payable to the City, equal to ten percent (10%) of the total amount of this proposal, and agrees that said bid bond shall be given as a guarantee that the Bidder will enter into the Contract within the time herein stated if the award is made to him by the City. In case of the Bidder's refusal or failure to do so within ten (10) days of Notice of the Award of Contract, or within five (5) days after receiving notice from the City of the rejection of any objections to the Notice of Award, the bond will be forfeited.

The Bidder grants the City the right to hold the lowest three (3) Proposals received, together with the accompanying bid securities, for a period of forty-five (45) days after the date of opening of said Proposals.

The undersigned Bidder further grants the City the right to award this Contract on the basis of any possible combinations of Base Bid and add/deduct alternate(s) (if any) that best suits the City's needs.

Bidder agrees that the City has determined that a reasonable time for the **SR 179 Pedestrian Crossing at Oak Creek** is the contract time stated in the Advertisement for Bids and issued addendum. The Bidder agrees that this proposal is submitted on this basis, subject to provisions contained in the Contract Documents relating to extensions of time, and agrees to plan and prosecute the work with such diligence that the work shall be completed within the time specified.

Bidder agrees that the bid includes the following items which have been completed in full by the Bidder:

- (a) Bid or Proposal
- (b) Bid Schedule
- (c) Bid Guaranty Bond
- (d) Certification of the Bidder's experience and qualifications and statement of Bidder's Qualifications
- (e) List of all proposed Subcontractors

- (f) Schedule of manufacturers and suppliers, major equipment and material items
- (g) Non-collusion Affidavit
- (h) Certificate of Insurability
- (i) Signed Addenda

Bidder agrees that the City assumes no responsibility for any understanding or representation made by any of its Council members, officers or agents during or prior to the bidding and execution of the Contract, unless (1) such understanding or representations are expressly stated in the Contract or Addenda thereto, or (2) the Contract expressly provides that responsibility therefore is assumed by the City, or (3) said understanding or representation is contained in the information supplied to Bidders by the City or the City Engineer, or as information distributed pursuant to the Information for and Instructions to Bidders. The Bidder further understands that only the Mayor and Council of the City through action taken at a properly noticed meeting, can waive any term or condition or requirement of this Contract or of the bid.

Bidder agrees that all terms set forth in the Information for and Instructions to Bidders as well as all other Contract Documents shall be binding upon the Bidder if a Notice of Award is issued in favor of said Bidder by the City.

Bidder agrees that all major equipment and suppliers shall be set forth herein on the attached "Schedule of Manufacturers and Suppliers, Major Equipment and Material Items",

Bidder understands that this project is to be constructed in compliance with all City, State and Federal laws, rules and regulations, which are applicable to the project and the Contractor and all work performed hereunder.

In making this proposal, the undersigned incorporates and acknowledges all definitions set forth in the Contract Documents.

The undersigned hereby submits this proposal and the accompanying Bid Schedule as its proposal to construct the improvements described in the Contract Documents.

The name and location of the place of business of each Subcontractor who will perform work or labor or render service to the general Contractor in or about the construction of the work or improvements in an amount in excess of one and one-half percent (1.5%) of the general Contractor's total Bid, and the portion of the work which will be done by each Subcontractor is set forth in the Proposed Subcontractor list attached hereto.

Bidder has received all Addenda before submission of Bid, and has examined the same and has included them in the Contract Documents prior to submitting the Bid and has submitted the Bid based upon them.

The Bonding company which will supply the required Performance and Payment bond is:

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### Bid Schedule

City of Sedona – SR 179 Pedestrian Crossing at Oak Creek  
Project # 2022 SIM-4C

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1.8	MATERIALS TESTING	JOB	1	\$	\$
1.9	CONSTRUCTION SURVEY AND LAYOUT	JOB	1	\$	\$
1.10	AS-BUILT PREPARATION	JOB	1	\$	\$
2.2.1	MOBILIZATION/DEMOBILIZATION	JOB	1	\$	\$
2.2.2	MAINTENANCE AND PROTECTION OF TRAFFIC	JOB	1	\$	\$
2.2.3	STORM WATER POLLUTION PREVENTION PLAN	JOB	1	\$	\$
2.2.4	REMOVE AND SALVAGE EXISTING PROPERTY WALL	LF	78	\$	\$
2.2.5	REMOVE EXST SITE WALL	LF	22	\$	\$
2.2.6	REMOVE AND SALVAGE EXST POLE WITH WIND ART	EACH	3	\$	\$
2.2.7	REMOVE AND SALVAGE EXST TLAQUEPAQUE ARCH SIGN	EACH	1	\$	\$
2.2.8	REMOVE EXST ASPHALTIC CONCRETE PAVEMENT	SY	15	\$	\$
2.2.9	REMOVE EXST CONCRETE SIDEWALK	SF	381	\$	\$
2.2.10	REMOVE AND STOCKPILE EXISTING EROSION PROTECTION	LSUM	1	\$	\$
2.2.11	REMOVE EXST GABIONS	SF	120	\$	\$
2.2.12	REMOVE AND RELOCATE EXST WATER QUALITY BOX	EACH	1	\$	\$
2.2.13	RELOCATE FIRE HYDRANT	EACH	1	\$	\$
2.2.14	RELOCATE EXSTING PROPERTY WALL LIGHTS	EACH	2	\$	\$
2.2.15	RELOCATE WATER METER	EACH	1	\$	\$
2.2.16	RELOCATE EXST LIGHT POLE	EACH	2	\$	\$
2.2.17	RELOCATE EXST CATV BOX	EACH	1	\$	\$



2.2.18	ADJUST VALVE BOX AND COVER TO GRADE PER MAG STD DTL 270	EACH	1	\$	\$
2.2.19	REMOVE EXST DUMPED RIPRAP	CY.	735	\$	\$
2.2.20	RELOCATE EXST TELCO PEDESTAL	EACH	2	\$	\$
2.2.21	TREE PROTECTION SHORING	LSUM	1	\$	\$
2.2.22	TEMPORARY FILL STABILIZATION	LSUM	1	\$	\$
2.2.23	SUBGRADE PREP	SY	724	\$	\$
2.2.24	CHANNEL EXCAVATION (INCL. HAUL OFFSITE)	CY	1,765	\$	\$
2.2.25	AGGREGATE BASE COURSE	TON	151	\$	\$
2.2.26	CONCRETE SIDEWALK PER MAG STD DTL 230 WITH MESH	SF	6,200	\$	\$
2.2.27	CONCRETE PAVERS	SF	104	\$	\$
2.2.28	RETAINED CURB	LF	218	\$	\$
2.2.29	MEDIAN BOLLARDS AND CHAIN (SPECIAL DETAIL)	EACH	2	\$	\$
2.2.30	3-FT MAN GATE WITH LOCK	EACH	1	\$	\$
2.2.31	REINFORCED CONCRETE CANTILEVER RETAINING WALL	SF	2,689	\$	\$
2.2.32	MASONRY PROPERTY WALL	SF	700	\$	\$
2.2.33	SHORT CONCRETE GRAVITY WALL	SF	51	\$	\$
2.2.34	REINFORCED CONCRETE SLAB OVERHANG	SF	566	\$	\$
2.2.35	NEW MODIFIED MAG 206 CONCRETE SCUPPER	EACH	1	\$	\$
2.2.36	NEW DRAIN INLET	EACH	4	\$	\$
2.2.37	PERMEATION GROUTING	LSUM	1	\$	\$
2.2.38	PLACE SALVAGED DUMPED RIVER ROCK	CY	340	\$	\$
2.2.39	GABION MATTRESS AND BASKETS	CY	31	\$	\$
2.2.40	LANDSCAPING	LSUM	1	\$	\$
2.2.41	IRRIGATION	LSUM	1	\$	\$

2.2.42	TLAQUEPAQUE PROPERTY SYCAMORE TREE PROTECTION	LSUM	1	\$	\$
2.2.43	CONCRETE BARRIER	LF	208	\$	\$
2.2.44	CONCRETE BARRER WITH HANDRAIL	LF	52	\$	\$
2.2.45	DECORATIVE RAILING	LF	663	\$	\$
2.2.46	DECORATIVE RAILING WITH HANDRAIL	LF	216	\$	\$
2.2.47	HANDRAIL (WALL ATTACHMENT)	LF	243	\$	\$
2.2.48	TRASH RECEPTACLE	EACH	3	\$	\$
2.2.49	SIGN POST (PERFORATED) (2 S)	LF.	32	\$	\$
2.2.50	SIGN POST (PERFORATED) (2 1/2 S)	LF.	32	\$	\$
2.2.51	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	5	\$	\$
2.2.52	WARNING, MARKER, OR REGULATORY SIGN PANEL	SF	14	\$	\$
2.2.53	FLAT SHEET ALUMINUM SIGN PANEL	SF	32	\$	\$
2.2.54	WATERBORNE-TYPE I PAVEMENT MARKING(PAINTED)(YELLOW)	LF	126	\$	\$
2.2.55	ELECTRICAL CONDUIT (1") (PVC)	LF	80	\$	\$
2.2.56	ELECTRICAL CONDUIT (1 1/2") (PVC)	LF	760	\$	\$
2.2.57	PULL BOX (NO. 5)	EACH	4	\$	\$
2.2.58	PULL BOX (6" x 6" In Wall)	EACH	3	\$	\$
2.2.59	PULL BOX (8" x 6" In Wall)	EACH	9	\$	\$
2.2.60	CONDUCTOR (NO. 12)	LF	1,920	\$	\$
2.2.61	CONDUCTOR (NO. 10)	LF	540	\$	\$
2.2.62	CONDUCTOR (NO. 8)	LF	1,520	\$	\$
2.2.63	CONDUCTOR (INSULATED BOND)	LF	840	\$	\$
2.2.64	METER PEDESTAL CABINET (LIGHTING)	EACH	1	\$	\$
2.2.65	MISCELLANEOUS WORK (LED Rope)	LF	40	\$	\$

2.2.66	MISCELLANEOUS WORK (POLE (14') (Decorative))	EACH	5	\$	\$
2.2.67	MISCELLANEOUS WORK (POLE FOUNDATION (STANDARD BASE))	EACH	5	\$	\$
2.2.68	MISCELLANEOUS WORK (MAST ARM (Decorative))	EACH	5	\$	\$
2.2.69	MISCELLANEOUS WORK (LUMINAIRE (LED) (GBLF3 Decorative))	EACH	5	\$	\$
2.2.70	MISCELLANEOUS WORK (Step Light Wall Fixture)	EACH	20	\$	\$
2.2.71	PAINT EXST ADOT FACILITIES	LSUM	1	\$	\$
2.2.72	CONCRETE STAIN COLOR TREATMENT	EACH	1	\$	\$
2.2.73	WINDOW AND FRAME ART PANEL	LSUM	2	\$	\$
2.2.74	BARREL SIGN BASE	EACH	3	\$	\$

**Total Direct Base Bid Costs:**      \$ \_\_\_\_\_

**Alternative Bid Item 1**

1.8	MATERIALS TESTING	JOB	1	\$	\$
1.9	CONSTRUCTION SURVEY AND LAYOUT	JOB	1	\$	\$
1.10	AS-BUILT PREPARATION	JOB	1	\$	\$
2.2.1	MOBILIZATION/DEMOBILIZATION	JOB	1	\$	\$
4.2.1	9-FOOT WATERWHEEL	EACH	1	\$	\$
4.2.2	WHEEL SUPPORT COLUMN	EACH	1	\$	\$
4.2.3	WHEEL SCUPPER AND SUPPORT SYSTEM	EACH	1	\$	\$
4.2.4	WATER BASIN AND CONTAINMENT TROUGH	EACH	1	\$	\$
4.2.5	IRONWORKS WATER GRADE (8-INCH RIVER ROCK FINISH)	LF	20	\$	\$
4.2.6	POND PUMP	EACH	1	\$	\$
4.2.7	WATER METER AND BACKFLOW PREVENTER	EACH	1	\$	\$
4.2.8	AGT GLOW STONE	SF	32	\$	\$

4.2.9	CIP SEAT WALL	LF	10	\$	\$
4.2.10	HAND WATER PUMP AND ACTIVATOR	EACH	1	\$	\$
4.2.11	1-INCH SCH 40 PVC	LF	135	\$	\$
4.2.12	2-INCH SCH 40 PVC SLEEVE	EACH	22	\$	\$
4.2.13	FLAT SHEET ALUMINUM SIGN PANEL	SF	5	\$	\$
4.2.14	CONDUCTOR (NO.8)	LF	50	\$	\$

**Total Alternative Bid Item 1 Costs:     \$ \_\_\_\_\_**

**CIP: COMPLETE IN PLACE**

**The lowest bidder, Owner reserves the right to vary the quantities shown at their discretion. The contractor will accept the quantities if no corrections are made at the conclusion of the pre-bid meeting. All facilities incidental to the item are included in the unit price estimate. Bid Prices submitted include all local, state, and federal taxes.**

**The lowest bidder will be defined based upon a combination of the base bid amount plus alternative bid item(s), or a combination of alternative bid items as determined by the City of Sedona to be in its best interest.**

UNIT PRICES SHALL BE USED WHEN EXTENSION OF UNIT PRICES AND TOTAL AMOUNT CONFLICT. WRITTEN UNIT PRICES SHALL BE USED WHEN WRITTEN AND NUMERICAL UNIT PRICES CONFLICT. BID PRICES SUBMITTED INCLUDE ALL LOCAL, STATE AND FEDERAL TAXES.

The City of Sedona reserves the right to reject all bids, or to award only the base bid, or to award a bid based upon the total of the Base Bid plus additive alternate(s) as selected for award from the additive alternate bid schedule, if additive alternate bid schedule is applicable.

The Additive or Alternative Bid Schedule Items are for improvement work that the City of Sedona, at its sole discretion, may authorize for inclusion in the contract as additive or alternate work following closure of bidding. Additive or Alternative Bid items are not guaranteed to be part of the awarded contract work and the City of Sedona may select any one or combination of Additive or Alternative Bid items from the Additive or Alternative Bid Schedule(s) for inclusion in the contract work.

BIDDERS MUST COMPLETE AND PROVIDE PRICING FOR BOTH THE BASE BID SCHEDULE AND ALL ADDITIVE/ALTERNATIVE BID SCHEDULES. FAILURE TO COMPLETE AND SUBMIT PRICING FOR THE BASE BID SCHEDULE AND ALL ADDITIVE/ALTERNATIVE BID SCHEDULES MAY RENDER A BID NON-RESPONSIVE AND MAY BE GROUNDS FOR REJECTION OF THE BID.

**The undersigned is licensed in accordance with the Laws of the State of Arizona:**

License Number \_\_\_\_\_ Class \_\_\_\_\_

NOW: In compliance with the Notice Inviting Bids and all the provisions hereinbefore and after stipulated, the undersigned, with full cognizance thereof, hereby proposes to perform the Work for the prices set forth in the preceding Schedule(s) upon which award of contract is made.

Individual Name: \_\_\_\_\_  
Contractor Address: \_\_\_\_\_

Partnership Name: \_\_\_\_\_  
Business Address: \_\_\_\_\_  
By: \_\_\_\_\_, Partner  
Other Partners: \_\_\_\_\_

Corporation Name: \_\_\_\_\_  
Business Address: \_\_\_\_\_  
By: \_\_\_\_\_, President  
\_\_\_\_\_, Secretary

Organized under the Laws of the State of \_\_\_\_\_

Date: \_\_\_\_\_ Contractor: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(SEAL) By: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The undersigned Bidder acknowledges receipt of the following addendum:

Addendum #	Dated	Initial
_____	_____	_____
_____	_____	_____

\_\_\_\_\_  
Signature of Bidder

**PROPOSED SUBCONTRACTORS**

The following information gives the name, business address, and portion of work (description of work to be done) for each Subcontractor that will be used in the work if the Bidder is awarded the Contract. No Subcontractor doing work in excess of one and one-half percent (1.5%) of the total amount of the bid and who is not listed shall be used without the written approval of the City, which shall not be unreasonably withheld. (Additional supporting data may be attached to this page. Each page shall be sequentially numbered and headed "Proposed Subcontractors" and shall be signed.) Substitutions of Subcontractors may be made by the Bidder as long as all Subcontractors used meet all requirements for all Subcontractors and all subcontract agreements meet all requirements set forth in the Contract Documents. The total value of subcontracted work shall not exceed fifty percent (50%) of the contract work as bid. The Bidder shall perform 50% or more of the contract work using Bidder's organization, unless stated otherwise in the specifications. The subcontractor shall have the license required for the work performed. **The subcontractor shall have the license required for the work performed. The subcontractor will be required to have a current City of Sedona Business License for the duration of the contract.**

<u>Subcontractor Name</u>	<u>Business Address</u>	<u>Description of Work</u>

\_\_\_\_\_  
Signature of Bidder

**SCHEDULE OF MANUFACTURERS AND SUPPLIERS - MAJOR EQUIPMENT AND MATERIAL ITEMS**

The Bidder proposes that the named items of major equipment and materials required for work will be supplied by the manufacturers or suppliers set forth below as written in by the Bidder. Substitutions will be allowed in accordance with the Contract Documents:

**Item**

**Manufacturer or Supplier**


**WORKMEN'S COMPENSATION INSURANCE**  
**CERTIFICATE**

I am aware of the provisions of Arizona Law, which require every employer to be insured against liability for workmen's compensation in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

Date: \_\_\_\_\_

By: \_\_\_\_\_



**NON-COLLUSION AFFIDAVIT**

TO BE EXECUTED BY EACH AWARDEE OF A PRINCIPAL CONTRACT IN THE

STATE OF \_\_\_\_\_ )  
 ) ss  
COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_, being first duly sworn, deposes and says:

1. That he is \_\_\_\_\_ (sole owner, a partner, president, secretary, etc.) of \_\_\_\_\_, the party making the foregoing Bid.
2. That such Bid is not made in the interest of or on behalf of any undisclosed person, partnership, company association, organization, or corporation.
3. That such Bid is genuine and not collusive or sham.
4. That said bidder has not directly induced or solicited any other Bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding.
5. That said Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid Price of said Bidder or of any other Bidder, nor to fix any overhead, profit, or cost element of such Bid Price, nor of that of any other Bidder, nor to secure any advantage against the public body awarding the Contract or anyone interested in the proposed Contract.
6. That all statements contained in such Bid are true.
7. That said Bidder has not, directly or indirectly, submitted his Bid Price or any breakdown thereof, nor the contents thereof, nor divulged information or data relative thereto, nor paid and will not pay any fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, nor to any member or agent thereof, nor to any other individual except to such person or persons as have a partnership or other financial interest with said Bidder in his general business.

**NON-COLLUSION AFFIDAVIT**

(Continued)

\_\_\_\_\_  
Name of Business

\_\_\_\_\_  
By

\_\_\_\_\_  
Title

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(Notary Public)

My Commission expires: \_\_\_\_\_

## STATEMENT OF BIDDER'S QUALIFICATIONS

If bidder is a corporation, answer the following:

- (a) Date of incorporation: \_\_\_\_\_
- (b) State of incorporation: \_\_\_\_\_
- (c) President's name: \_\_\_\_\_
- (d) Vice President's name(s): \_\_\_\_\_
- (e) Secretary's or Clerk's name: \_\_\_\_\_
- (f) Treasurer's name: \_\_\_\_\_

If bidder is a partnership, answer the following:

- (a) Date of organization: \_\_\_\_\_
- (b) Name and address of all partners. State whether it is a general or limited partnership:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If other than a corporation or partnership, describe the organization and name principals:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Major Types of Work Done by Company: \_\_\_\_\_  
\_\_\_\_\_

Principal Office: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Contractor's Bank and Local Contact: \_\_\_\_\_

## EXPERIENCE QUESTIONNAIRE

1. How many years has your organization been in business as a contractor under your present business name?

---

2. How many years' experience in the proposed type and size of construction work has your organization had:

---

(a) As a general contractor? 

---

(b) As a subcontractor? 

---

3. Are you licensed as a General Engineering contractor, or any other title?

---

If "yes", in what city, county and state? 

---

What class license and number? 

---

4. List the most recent projects your organization has had in construction of work similar in type and size to the work proposed herein:

<u>Contract Amount</u>	<u>Class of Work</u>	<u>When Completed</u>	<u>Name, Address and Telephone No. of City</u>
----------------------------	--------------------------	---------------------------	--

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5. Has any construction contract to which you have been a party been terminated by the owner; have you ever terminated work on a project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work

in its own name or financed such completion on your behalf; has any surety extended any monies in connection with the contract for which they furnished a bond on your behalf? If the answer to any portion of this question is “yes”, please furnish details of all such occurrences including the name of the owner, architect or engineer, and surety, name and date of project.

☐ YES ☐ NO

6. Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated by the owner; terminated work on a project prior to its completion for any reason; had any surety which issued a performance bond complete the work in its own name or finance such completion; or had any surety expend any monies in connection with the contract for which they furnished a bond? If the answer to any portion of this question is “yes”, please furnish details of all such occurrences including name of owner, architect or engineer, and surety, name and date of project.

☐ YES ☐ NO

7. What is the experience of the principal individuals of your organization?

Individual's Name	Yrs Exp with this Company	Present Position or Office	Years of Construction Experience	Magnitude & Type of Work	In What Capacity

8. How many municipal roadway projects having similar rock excavation requirements has your company, or the sub-contractor responsible for this work, completed in the past 12-years? (This does not include an individual’s experience, separate from the company’s experience; an individual’s experience should be listed in their resume, if provided. **List a minimum of 3 projects.**)

No.	Project Name	Owner	Contact	Contact Phone	Approx. Rock Excavation Amount (CY)
1					
2					
3					
4					

9. How many municipal projects, has your company completed in the past 10-years? (This does not include an individual's experience, separate from the company's experience; an individual's experience should be listed in their resume, if provided. List a minimum of 6 projects.)

No.	Project Name	Owner	Contact	Contact Phone	Amount
1					
2					
3					
4					
5					
6					

# BIDDER'S AFFIDAVIT

The undersigned, as \_\_\_\_\_  
(President, Officer of Corporation, Member of Firm) of the prospective bidder, hereby certifies that the foregoing information is, to the best of his/her knowledge and belief, true and accurate as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_. Contractor, by his signature hereon, authorized the obtaining of reference information and hereby releases the party providing such information and the City of Sedona from any and all liability to Contractor as a result of such reference information being provided. Contractor further waives any right to receive copies if information so provided.

Corporate Seal  
(If Corporation)

Contractor

BY: \_\_\_\_\_  
Position (must be President, Officer of Corporation or member of Partnership as applicable)

STATE OF \_\_\_\_\_ )  
 ) ss  
COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for the \_\_\_\_\_.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(Notary Public)

My Commission expires: \_\_\_\_\_

### **CONTRACTOR'S FINANCIAL STATEMENT**

1. Submit the most recent financial statements, including the Balance Sheet, Income Statement, sources and uses of funds, notes to the financial statement, and the auditor's opinion, that cover the most recent twelve (12) month period. These statements must have been audited by a Certified Public Accountant. However, if the prospective bidder has previously performed satisfactory work according to the City of Sedona's Engineering Department, unaudited financial statements may be allowed.

Financial statements must be submitted on an accrual basis, in a form which clearly indicates the bidder's assets, liabilities, and net worth.

2. Also submit the most recent unaudited financial statements subsequent to number 1 above.

**(Financial statements shall be required of and submitted by the apparent low bidder within two (2) days after the bid opening)**



**CERTIFICATE OF INSURABILITY**

I hereby certify that as Bidder to the City of Sedona, Arizona, SR 179 Pedestrian Crossing at Oak Creek project, I am fully aware of the requirements of the City insurance requirements for contractors and that by submitting this bid proposal, assure the City that I am able to produce the required minimum insurance coverage should I be selected to be the successful Bidder.

Should I be selected to be the successful Bidder and then become unable to produce the insurance coverage within ten (10) days of receipt of the Notice of Award, I understand that my bid will be rejected and that I will forfeit my bid bond.

By: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

## **SPECIAL CONDITIONS**

### **General**

Work shall be in accordance with Uniform Standard Specifications for Public Works Construction, distributed by Maricopa Association of Governments, latest edition (MAG), except to the extent that these specifications specify other procedures, processes, forms, materials, details, or other direction regarding the work, and as required to comply with local ordinances and regulations.

Whenever the term County is used it shall be held to mean the City of Sedona. Whenever the term County Engineer is used it shall be held to refer to the City Engineer.

Electrical work shall be subject to inspection by the City of Sedona Building Safety Division and compliance with its requirements.

### **General Provisions**

The General Conditions and Specifications shall be considered as immediately following the Special Conditions in Order of Precedence and are part of the Contract documents.

#### **1. Project Sign**

The Contractor shall install one project sign. The sign shall identify the project and the City of Sedona as the Project owner and provide a contact person for both the City and the Contractor. The sign shall be securely mounted and placed so that the bottom of the sign does not impede vehicular or pedestrian traffic flow or otherwise become a safety concern. The Contractor shall provide the project sign for the duration of the on-site work on the project. Payment of more than 75% of mobilization shall not be payable until the sign is in place. Failure to maintain the sign erect and in legible condition may result in up to a deduction from the contract payment equal to 0.25% for each time a written notice regarding improper sign maintenance is issued by the Engineer.

The required sign shall be mounted at a location within the project limits visible to the public as it enters or moves adjacent to the project area. The Contractor shall locate the sign in a location mutually agreeable to the Project Engineer and the Contractor within the project area. The sign shall be constructed per the Project Construction Sign Detail included at the end of the Special Conditions section. Compensation for this item shall be considered as included in the price for bid item "Mobilization". The Contractor shall present the sign design as a project submittal. The Percent Complete Bar shall be filled in as the project progresses in accordance with Article 6 of the General Conditions.

#### **2. Public Convenience and Safety**

Within the City of Sedona public convenience and safety are matters to which the Contractor is expected to devote attention to at all times during the project. The Contractor shall minimize disruption of normal vehicular and pedestrian traffic patterns and routes, the disruption of normal property services such as, but not limited to, mail delivery and garbage pick-up. Failure in making these provisions shall subject the Contractor to deductions from payments due under the contract as determined by the City Engineer.

### **3. Start of Construction**

Construction shall not begin until the Contractor has at a minimum provided the following:

- A traffic control plan that has been approved by the City Engineer
- The Storm Water Pollution Control Plan provisions are in place per the SWPPP in the Civil Plans
- The contractor shall have a City of Sedona NOI for storm water pollution prevention
- A minimum of 2 working days written notice delivered to property owners, residents, and HOA President within and 300 feet adjacent to the work area. The notice shall state the Contractor's contact information, brief description of the project, and the project's anticipated start date
- Survey stakes and marks have been placed in the field to accommodate at least two weeks construction work and survey notes have been provided to the City as per the project specifications
- The Project Sign has been posted
- Equipment Rate Submittal as required by Section 47.D.3 of the General Conditions
- A complete project schedule as required by the General Conditions and Section 2 of the Special Conditions

This provision shall not require that the City of Sedona refrain from issuing a notice to proceed or require an extension of time to accommodate Contractor compliance with it.

### **4. Project Control**

The horizontal and vertical control for this project is shown on the civil drawings

- The benchmarks for this project are indicated on the civil drawings
- The Contractor shall be responsible for all survey on the project **see Section 15 of the General Conditions.**

### **5. Submittals**

In addition to the submittals called for in the Technical Specifications and General Conditions, additional submittals are required for the following items: shoring plan, sewer pipe, manholes, concrete mix design, asphalt mix design, metal fabrications, project sign, and equipment rental rates for all equipment to be utilized for the project (as required by Section 47.D.3 of the General Conditions).

### **6. Various items of Work**

The Contractor shall provide the City reasonable and timely notice in writing prior to exceeding quantities established in the Bid Schedule. Failure to notify the City in a timely manner prior to exceeding the contractual quantities identified in the Bid Schedule shall be sufficient reason for the City to deny such claim.

Roadway specifications shall conform (or comport with City Code Sections...) to City Code Sections 12.05.110 and 12.05.120.

Clearing and grubbing shall be subject to MAG specification Section 201 and full compensation shall be considered as provided in bid item "Mobilization". No separate payment shall be made for trees.

It is the contractor's responsibility to comply with the ADA, specifically the requirements of ADAAG, even if the project plans show an item to not meet the requirements of ADAAG.

The City of Sedona reserves the right to request a schedule of values for any of the lump sum bid items.

All guarantees shall be per Section 51 of the General Conditions.

If it is determined that import or export of earthen material in excess of 40 cubic yards (combined total) is needed, a Haul Plan shall be provided to the City Engineer. At least 5 city working days prior to the placement of fill or excavated material from a grading project within the city on other properties located within the city, Engineering Services shall be notified in writing of the intent to place the material on other property. This requirement shall apply when the total amount of material placed on other properties within the city exceeds 40 cubic yards or if the other property on which the fill is to be placed is located within 0.75 miles of Oak Creek, or lies within a city designated flood plain. The City Engineer may approve or deny permission to place such material.

The contractor shall provide copies of all required testing to Engineering Services.

The City reserves the right to require that payment requests be submitted in a format it approves.

The City may require information as necessary to verify proper work eligibility of persons, subcontractor, or others providing labor, equipment, material or services to this project. This may include but is not limited to social security numbers, driver's license numbers, and evidence of age or citizenship.

## **7. Permits**

The Contractor shall be responsible for obtaining permits bearing on the work and adhere to provisions of said permits. The Contractor shall also adhere to requirements of Homeowner Associations or similar organizations when establishing equipment, storage or other yards within subdivisions. Evidence of such adherence shall be provided in writing, if requested by the City.

## **8. Utility Relocation**

It shall be the responsibility of the Contractor to arrange and coordinate the relocation of any utilities found to be in conflict with the work. Utility relocation costs not identified as a bid item in the contract will be the City's responsibility.

## **9. Local Drainage**

The Contractor shall reconstruct roadways, driveways, sidewalks, ditches and other surfaces at elevations that will ensure the drainage is improved or unchanged from the existing pre-construction conditions.

The Contractor shall manage any upstream flows during construction to maintain continuous conveyance and historic flow patterns through the project area.

#### **10. Required Inspection**

Work requiring inspection includes the following: testing, asphalt preparation and placement, cleanup, rebar inspection, traffic control setup and removal, trench bedding placement and backfill compaction, pipe placement, and concrete formwork prior to pouring concrete.

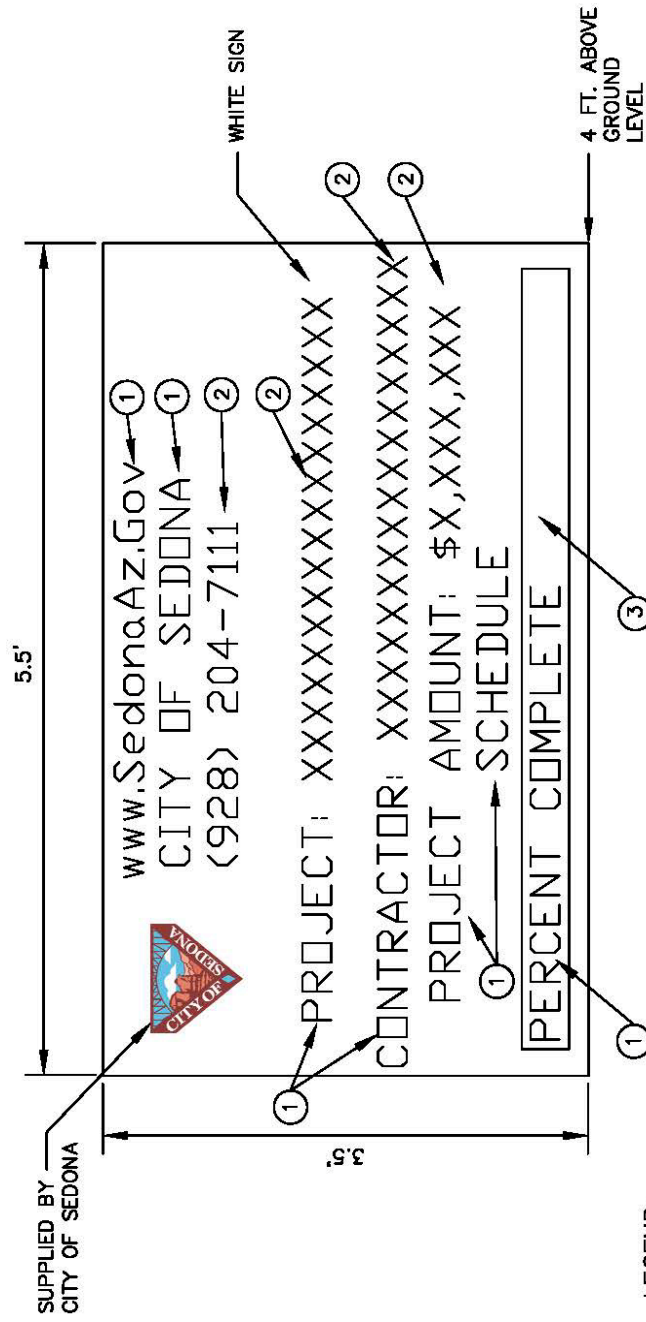
#### **11. Order of Construction/Site Access**

The Contractor shall develop a schedule for construction consistent with General Condition number 9, which shall minimize the amount of construction traffic on the existing SR 179 to the extent practical.

#### **12. Export Material Sites**

The City of Sedona material laydown yard located along the southern portion of the Sedona Wastewater Reclamation Plant at 7500 W State Route 89A is made available for disposal of clean excess excavated earthen materials exported from the project site. The Contractor shall be responsible for managing exported material at the City's material laydown yard in a neat stockpile within the confines of an area as designated by the City.

07.DWG



LEGEND:

- ① - 3" BLACK LETTERING
- ② - 3" BLUE LETTERING
- ③ - WHITE WITH RED INDICATOR

SCALE: N.T.S.

07.DWG Path: L:\Sedona Standard Details\07.dwg Plot Date/Time: 01/21/16 09:08am

SPECIAL DETAIL NO. 07	CHECK WITH CITY ENGINEER FOR UPDATES	PROJECT CONSTRUCTION SIGN	SPECIAL DETAIL NO. 07
--------------------------	--------------------------------------	---------------------------	--------------------------

## NOTICE OF AWARD

Date \_\_\_\_\_

Contractor Name. \_\_\_\_\_

Street or PO Box \_\_\_\_\_

City, State Zip \_\_\_\_\_

### **SUBJECT: NOTICE OF AWARD – SR 179 PEDESTRIAN CROSSING AT OAK CREEK**

The City of Sedona, having duly considered the bid submitted on \_\_\_\_\_, 20\_\_\_\_ for the City of Sedona \_\_\_\_\_ as outlined in the Contract Documents and detailed on the drawings, and it appearing that your proposal for performing the work is fair, equitable, and in the City's best interest, and the bid includes price for work in the bid schedule in the estimated total amount of \$ \_\_\_\_\_ said bid is hereby accepted at the prices contained therein, and in accordance with all provisions set forth in the Contract Documents.

In accordance with the terms of the Contract Documents, you are required to execute the formal Contract and furnish the required Performance and Payment Bonds within ten (10) consecutive calendar days from and including the date of receipt of this Notice.

In addition, you are requested to furnish at the same time, the required Owner's protective liability and property damage insurance policy, and certificates of insurance in triplicate evidencing compliance with the other requirements for insurance stated in the Contract Documents. Your certificates of insurance shall be accompanied by a letter from your insurance company stating that the insurance certificate meets the entire requirements of the specifications, or shall state and describe specific exclusions.

The Bid Bond submitted with your proposal will be retained until the Contract has been executed and the required Performance and Payment Bonds have been furnished and approved. In the event that you should fail to execute the Contract or furnish the Performance and Payment Bonds within the time limit specified, the City, at its discretion, may cash the Bid Bond and proceed with steps that are in the City's best interest.

RECEIVED AND ACCEPTED:

CITY OF SEDONA, ARIZONA

Contractor \_\_\_\_\_

Sincerely,

By: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
Robert Welch, P.E.,  
Associate Engineer

Enclosures (3) contracts

RJW/clp

cc: Karen Osburn, City Manager  
Andy Dickey, Public Works Director/City Engineer  
File

**NOTICE TO PROCEED**

Date \_\_\_\_\_

Contractor Name. \_\_\_\_\_

Street or PO Box \_\_\_\_\_

City, State Zip \_\_\_\_\_

Attention: \_\_\_\_\_

Subject: **NOTICE TO PROCEED - SR 179 PEDESTRIAN CROSSING AT OAK CREEK**

You are hereby authorized to proceed with work effective \_\_\_\_\_, 20\_\_ and fully complete all work within \_\_\_\_\_ consecutive days from this date. The completion date for this Project is therefore \_\_\_\_\_, 20\_\_. Liquidated damages of \$ **XXX** per day are applicable for each day past \_\_\_\_\_, 20\_\_ for which work on this Project is not complete, unless an adjustment is authorized by a change order. Please acknowledge your receipt of this letter and agreement with the terms stated by signing in the space provided and returning to the City for our files.

**CITY OF SEDONA, ARIZONA**

By: \_\_\_\_\_

Robert Welch, P.E.

Associate Engineer

Date: \_\_\_\_\_

Receipt Acknowledged:

By: \_\_\_\_\_

Date: \_\_\_\_\_





## City of Sedona Public Works Department

102 Roadrunner Drive Sedona, AZ 86336

(928) 204-7111 Fax: (928) 282-5348

### Public Works Department

#### Change Order

This change order is not effective unless signed by the City Manager of the City of Sedona or his properly designated representative. Section 47 of the Contract General Conditions shall apply.

\*\*\*\*\*

THIS CHANGE ORDER CONSTITUTES FULL, FINAL AND COMPLETE COMPENSATION TO THE CONTRACTOR FOR ALL COSTS, EXPENSES, OVERHEAD, PROFIT, AND ANY DAMAGES OF EVERY KIND THAT THE CONTRACTOR MAY INCUR IN CONNECTION WITH THE WORK DESCRIBED IN THIS CHANGE ORDER, INCLUDING ANY IMPACT ON THE DESCRIBED WORK OR ON ANY OTHER WORK UNDER THE CONTRACT, ANY CHANGES IN THE SEQUENCES OF ANY WORK, ANY DELAY TO ANY WORK, ANY DISRUPTION OF ANY WORK, ANY RESCHEDULING OF ANY WORK, AND ANY OTHER EFFECT ON ANY OF THE WORK UNDER THIS CONTRACT. BY THE EXECUTION OF THIS CHANGE ORDER, THE CONTRACTOR ACCEPTS THE CONTRACT PRICE CHANGE AND THE CONTRACT COMPLETION DATE CHANGE, IF ANY, AND EXPRESSLY WAIVES ANY CLAIMS FOR ANY ADDITIONAL COMPENSATION, DAMAGES OR TIME EXTENSIONS, IN CONNECTION WITH THE DESCRIBED WORK.

\*\*\*\*\*

CHANGE ORDER NUMBER:

DATE:

PROJECT:

SUGARLOAF TRAILHEAD PARKING LOT IMPROVEMENTS

CONTRACTOR NAME:

REASON FOR CHANGE:

Plan Sheet #'s affected by this change:

Specification Sections upon which Change Order is based: GC 47-49

Change requested by (check one): ☐ City ☐ Contractor ☐ Both

Contract time adjustment: ☐ Calendar Days

This contract change order

☐ increases the maximum estimated contract compensation per GC Section 47 contract adjustment as follows:

☐ decreases the maximum estimated contract compensation per GC Section 47 contract adjustment as follows:

\$0.00	+ \$0.00	+ \$0.00	+ \$0.00	= \$0.00
Method A	+ Method B	+ Method C	+ Method D	= Total Cost Adjustment

#### Contract Compensation:

Original Contract Amount

\$1.00

This Change Order

\$0.00

All Previous Change Orders

\$0.00

Total Maximum Compensation

\$1.00

#### Contract Time:

Original Contract Time (days)

60

This Change Order (days)

0

All Previous Change Orders (days)

Total Maximum Contract Time (days)

60

CONTRACTOR

ACCEPTANCE

BY:

DATE:

CITY OF SEDONA - PUBLIC WORKS DEPT.

APPROVED

BY:

DATE:

CITY OF SEDONA - CITY MANAGER

APPROVAL

BY:

DATE:

Attach a more complete description of the change and supporting documentation to this form.

# General Conditions

## 2022

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# **GENERAL CONDITIONS**

## **1. CONTENTS**

The following Contract Provisions are general in scope and may refer to conditions, which will not be encountered in the performance of the work, included in this Contract and which are not applicable thereto. Any requirements, provisions or other stipulation of these General Conditions, which pertain to a non-applicable condition, shall be excluded from the scope of the Contract. Where conflict appears, "Special Condition" shall take precedence over "General Conditions". Full compensation for compliance with these General Conditions shall be considered as included in the total and various bid items of the contract and the contract time.

## **2. DEFINITIONS AND TERMS**

When the Contract indicates that work shall be "accepted, acceptable, approve, authorized, condemned, considered necessary, contemplated, deemed necessary, designated, determined, directed, disapproved, established, given, indicated, insufficient interpreted, ordered, permitted, rejected, required, reserved, satisfactory, specified sufficient, suitable, suspended, unacceptable, unsatisfactory," it shall be understood that these expressions are followed by the words "by the City of Sedona".

Wherever the following abbreviations, terms, or pronouns are used in the specifications, plans, or other Contract Documents, the intent and meaning shall be interpreted as follows:

### **ABBREVIATIONS**

AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADOT	Arizona Department of Transportation
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute, Inc.
ARA	American Railway Association
AREA	American Railway Engineering Association
ARTBA	American Road and Transportation Builders Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATSSA	American Traffic Safety Services Association

A WG	American Wire Gauge
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
EIA	Electric Industries Association
FHWA	Federal Highway Administration, Department of Transportation
FSS	Federal Specifications and Standards
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IMSA	International Municipal Signal Association
IPCEA	Insulated Power Cable Engineers Association
ITE	Institute of Transportation Engineers
MAG	Maricopa Association of Governments
MIL	Military Specifications
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NIST	National Institute of Standards and Technology
NSF	National Sanitation Foundation (NSF)
SAE	Society of Automotive Engineers
UL	Underwriters Laboratories, Inc.

**ADVERTISEMENT** - A public announcement inviting proposals for work to be performed or materials to be furnished.

**AWARD** - The acceptance by the City of a proposal.

**BASIS OF PAYMENT** - The terms under which "work" is paid, as a designated pay item in accordance with the quantity measured and the pay unit.

**BIDDER** - Any individual, partnership, joint venture, firm or corporation submitting a proposal for the advertised work, acting directly or through a duly authorized representative.

**CALENDAR DAY** - Each and every day shown on the calendar, beginning and ending at midnight.

**CERTIFIED INVOICE** - An invoice from a supplier which has been reliably endorsed by the Contractor guaranteeing that the material was purchased and received for the project and establishing the value of the material.

**CLAIM** - A written demand or request for additional compensation or additional time submitted to the Engineer that:

- A. Contains the words "This is a claim...", within its Subject line or the first paragraph
- B. Cites the contractual basis for the demand or request

C. Relates the Contractual basis cited to factual events occurring or that have occurred within the project.

**COMPLETION DATE** - The date on which the contract work is specified to be completed

**CONTRACT ITEM (PAY ITEM)** - A specifically named unit of work for which a price is provided in the Contract. The description, whether general or detailed, the content of the named unit of work shall be as per the project plans and specifications.

**CONTRACT CHANGE ORDER** - A written order issued to the Contractor by the City covering extra work, additions or alterations to the plans and specifications, and establishing the basis of payment and time adjustment for the work affected by the changes. The Contract Change Order is the only method authorized for changing the Contract.

**CONTRACT DOCUMENTS** - The following comprise the Contract Documents: Advertisement for Bids, Information for and Instructions to Bidders, Bid Proposal and Bid Guarantee Bond, Construction Contract, Change Orders, Addenda, Performance Bond, Labor and Material Payment Bond, Special Conditions, General Conditions, Technical Specifications, Notice of Award, Notice to Proceed, Drawings, Plans, Standard Specifications and Certificate of insurability. All of these documents together constitute the **CONTRACT**.

**CONTRACT TIME** - The number of calendar days allowed for the entire completion of the Contract, including authorized time extensions and work required to be complete after substantial completion. Where a calendar date of completion is specified, the Contract shall be completed on or before that date.

**CONTRACTOR** - Party contracting directly with the City to furnish and perform all work and services in accordance with the Contract Documents.

**COUNTY** - The County in which the work is to be done.

**DAY** - Unless otherwise defined shall mean "calendar" day.

**ENGINEER** - The City Engineer; or his designated representative.

**EXTRA WORK** - Work not provided for in the Contract as awarded but determined by the City to be essential to the satisfactory completion of the Contract within its intended scope.

**FINAL ACCEPTANCE** - The acknowledgment by the City that the project or the work has been completed in accordance with the Contract Documents and provides the date at which the warranty or guarantee period begins.

**INSPECTOR** - A person, persons, or firm authorized by the Engineer to make detailed reviews, observations, reports and determinations of contract performance.

**MAY** - Used to refer to permissive actions.

**METHOD OF MEASUREMENT** - The manner in which a pay item is measured to conform with the pay unit.

**NOTICE OF CLAIM** - A written notification submitted to the Engineer that a demand or request for additional compensation or additional time may be made. The notification shall

1. Contain the words "notification of a potential claim" within its Subject line or the first paragraph
2. Describe the occurrence which is the reason that the Notice of Claim is being presented

**NOTICE TO PROCEED** - Written notice to the Contractor to proceed with the contract work including, when applicable, the date of beginning of contract time. Start of Construction, as defined below, may start at a later date.

**PLANS** - The drawings and pictures depicting the location and special orientation of the work to be done.

**PROJECT** - The work to be completed pursuant to this contract.

**PROPOSAL** - A standard form plus information supplied by the City, which contains spaces for completion by the Bidder which, when completed in its entirety and executed by the Bidder, along with all required additional documents, shall constitute the Bid. Said Bid shall constitute the Contractor's offer to perform all work required as set forth in the Contract Documents for the amount of money stated in the Bid.

**PROPOSAL FORM** - The documents furnished by the City on which the offer of a bidder is submitted.

**PROPOSAL GUARANTY** - The security furnished with a proposal to Guaranty that the bidder will enter into the Contract if the proposal is accepted.

**RIGHT OF WAY** - A general term denoting land, property, or interest therein, acquired for or devoted to the construction of an improvement.

**SALVABLE MATERIAL** - Material that can be saved or salvaged. Unless otherwise designated or directed by the City or shown on the plans, all salvable material shall become the property of the Contractor.

**SAMPLES** - Samples are physical examples furnished or constructed by the Contractor to illustrate materials, equipment, workmanship or finishes, and to establish standards by which the work will be judged.



**SHALL** - Refers to mandatory actions by either the Contractor or the City.

**SHOP DRAWINGS** - Drawings, diagrams, illustrations, certificates, test reports, schedules, performance charts, brochures, shop layouts, fabrication layouts, assembly layouts, foundation layouts, wiring and piping layouts, specifications and descriptive literature required by the Contract Documents which the Contractor is required to submit for approval.

**START OF CONSTRUCTION** – The date in which the Contractor begins physical work at the project site. Restrictions on start of construction are provided in the General Conditions and may be specified in the Special Conditions.

**SUBCONTRACTOR** - Party supplying labor and/or material for work at the site of the project for, and under separate contract or agreement with, the Contractor. Nothing contained in the Contract Documents shall create any contractual relationship between the City and any subcontractor.

**SUBSTANTIAL COMPLETION** - The date when the work is sufficiently completed so it may be safely, conveniently, and beneficially utilized by the City for all of the purposes for which it was intended. Reduced liquidated damages are chargeable for a project or portions thereof which have separately specified damages, if there are items of work remaining to be performed relative to such work once full substantial completion status has been attained. In such cases the amount of liquidated damages due shall be twenty-five percent (25%) of the unreduced liquidated damage amount stated in the contract.

**SUPERINTENDENT** - The Contractor's authorized representative in charge of the work.

**WORK** - The furnishing of all labor, materials, equipment, and all other incidentals necessary to the successful and acceptable completion of all obligations as described in the Contract Documents, and the carrying out of all of the duties and obligations imposed by the Contract.

### **3. CONTRACTOR'S UNDERSTANDING**

A. It is understood and mutually agreed that by submitting a proposal, the Contractor acknowledges that he has carefully examined all documents pertaining to the work, the locations, accessibility, and general character of the site of the work and all existing buildings and structures within and adjacent to the site, and has satisfied himself as to the nature of the work, the condition of existing buildings and structures, the conformation of the ground, subsurface conditions, the character, quality, and equipment, machinery, plant, and any other facilities needed preliminary to and during prosecution of the work, the general and local conditions, the construction hazards, and all other matters, including but not limited to any labor situation which can in any way affect the work under the Contract. It is further mutually agreed that by submitting a proposal, the Contractor acknowledges that he has satisfied himself as to the feasibility and correctness of the Contract Documents for the construction of the work and that he

accepts all the terms, conditions, and stipulations contained therein; and that he is prepared to work in peace and harmony with other Contractors performing work on the site.

- B. No verbal agreement or conversation with any officer, agent, or employee of the City, either before or after the execution of the Contract, shall affect or modify any of the terms, conditions, or other obligations set forth in any of the Contract Documents.
- C. The Contractor understands that, unless specifically stated otherwise in the contract documents, the intent of the contract documents is to provide complete and operable facilities. The Contractor's bid amount for this project, therefore, shall be and is considered to be for completion in conformity with this understanding, regardless of whether some aspect of the work to be performed is named as a separate bid item or not.

#### **4. DEFECTIVE WORK**

- A. A City Representative, designated by the City Engineer, shall give written notice of the noncompliance to the Contractor, when, and as often as the City Representative determines through his inspection that procedures, material, equipment or workmanship incorporated in the Project does not meet the requirements of the Contract. Within five (5) working days from the receipt of such notice, the Contractor shall undertake the work necessary to correct such deficiencies, and to bring the work into compliance with the Contract Documents. Should the Contractor not agree with the City Representative's determination, and as a condition precedent to any request for either additional compensation or time extension, or both, resulting from the City Representative's determination, the Contractor shall within three (3) working days provide a Notice of Claim to the Engineer that he may claim additional compensation, time or both, and detailed explanation of the Contractor's position. The Contractor shall document the costs associated with the corrective work with daily records and cost data and shall furnish such information to the Inspector daily. Receipt of cost data shall not be construed to be an acceptance of the corrective work, or an authorization for a Change Order to cover the corrective work. Failure by the Contractor to provide the specified written notice of an intention to make a claim shall be sufficient basis to reject any related claim subsequently submitted.
- B. Prior to initial acceptance of the Project, the City may, at its option, retain work, which is not in compliance with the Contract if the City determines that such defective work is not of sufficient magnitude or importance to make the work dangerous or undesirable. The City also may retain defective work, if in the opinion of the Inspector, and with concurrence of the City Engineer, removal of such work is impractical or will create conditions, which are dangerous or undesirable. Just and reasonable value, for such defective work, shall be judged, by the Engineer and appropriate deductions shall be made in the payments due, or to become due to the Contractor. Initial acceptance shall not act as a waiver of the City's right to recover from the Contractor an amount representing the deduction for retention of defective work.

## **5. NOTICE AND SERVICE THEREOF**

Where the manner of giving notice is not otherwise provided for in the Contract Documents, any notice to the Contractor from the City relative to any part of the Contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted to the Contractor at the address given in the Contractor's proposal, or at the last business address known to the City, or delivered in person to the Contractor or his authorized representative on the site or transmitted electronically by facsimile or electronic mail using phone numbers and addresses last provided by the Contractor. It is mutually agreed that such notice shall be sufficient and adequate. The Contractor shall provide the City, upon written request, facsimile phone numbers and electronic mail addresses, in writing.

## **6. MATERIAL AND EQUIPMENT SPECIFIED BY NAME**

When material or equipment is specified by reference to one or more patents, brand names, or catalog numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements, and that other materials or equipment, of equal capacities, quality and function may be considered. The Contractor may offer material or equipment of equal or better quality and performance in substitution for those specified which he considers would be in the City's interest to accept. After the Award of the Contract, the City will consider offers for substitution only from the Contractor and will not acknowledge or consider such offers from suppliers, distributors, manufacturers, or Subcontractors.

### Substitutions

The Contractor's offer of substitution shall be made in writing to the Engineer and shall include sufficient data to enable the Engineer to assess the acceptability of the material or equipment for the particular application and requirements. If the offered substitution necessitates changes to or coordination with other portions of the work, the data submitted shall include drawings and details showing such changes. Contractor agrees to perform these changes as part of the substitution of material or equipment. Within thirty (30) calendar days after the receipt of the offer of substitution, the Engineer will review the material submitted by the Contractor and notify the Contractor if approved for use or objections, if any, to the proposed substitution or if further information is required. Upon notification by the Engineer, the Contractor shall either provide the approved material or equipment, which complies with project specifications, or furnish requested additional information. While the Engineer might not take any objections to the proposed substitution and may approve the same, such action shall not relieve the Contractor from responsibility for the efficiency, sufficiency, quality and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name. Any cost differential associated with a substitution shall be reflected in the Contractor's offer of substitution and the Contract Documents shall be modified by a Change Order.

When the specifications state the construction shall be performed by the use of certain methods and equipment, such methods and equipment shall be used unless other methods are authorized by the Engineer. If the contractor desires to use a method or type of equipment other than those specified, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the method and equipment proposed to be used and an explanation of the reasons for desiring to make the change. If approval is given it will be on the condition that the Contractor will be fully responsible for producing construction work in conformity with the Contract Documents. If material or equipment is specified by only one patent or proprietary name, or by the name of only one manufacturer, it is for the purpose of standardization, or because the City knows of no equal. If standardization is the reason for using one name to specify any material or equipment, the specifications will so state, and substitutions will not be considered. In other cases, the Contractor may offer substitutions in the same manner as requesting a Change Order for products he considers being equal to those specified.

## **7. CONTRACT BONDS AND GUARANTEES**

- A. The Contractor shall provide two surety bonds on the forms provided, each in an amount equal to 100% of the contract price. One shall serve as security for the faithful performance of the work and the other as security for the faithful payment and satisfaction of the persons furnishing materials and performing labor on the work. The bonds shall be issued by a corporation duly and legally licensed to transact surety business in the State of Arizona. Such bonds shall remain in force throughout the period required to complete the work and thereafter for a period of 365 calendar days after final acceptance of the work, plus 365 calendar days following the repair of any work pursuant to the guarantees herein made. The surety's liability on the bonds shall not exceed the underwriting limitations for the respective surety specified in Circular 570, published by the United States Department of the Treasury.
- B. Should any surety or sureties be deemed unsatisfactory at any time by the City, notice will be given to the Contractor to that effect and he shall forthwith substitute a new surety or sureties satisfactory to the City. No further payment shall be deemed due or will be made under this Contract until the new surety shall qualify and be accepted by the City.
- C. The Contractor guarantees to the City that all materials and equipment furnished under this Contract will be new and of good and sufficient quality, free from faults and defects as is necessary to complete the project as required by the Plans and Specifications.

## **8. INSURANCE**

- A. The Contractor, at Contractor's own expense, shall purchase and maintain the herein stipulated minimum insurance with companies duly licensed, possessing a current A.M. Best, Inc. Rating of B+6, as minimum and approved and licensed to do business in the State of Arizona with policies and forms satisfactory to the City.

- B. All required insurance herein shall be maintained in full force and effect until all work required to be performed under the terms of the Contract is satisfactorily completed and finally accepted - failure to do so may, at the sole direction of the City, constitute a material breach of this Contract.
- C. The Contractor's insurance shall be primary insurance, and any insurance or self-insurance maintained by the City shall not contribute to it.
- D. Any failure to comply with the claim reporting provisions of the policies or any breach of an insurance policy warranty shall not affect coverage afforded under the policy to protect the City.
- E. The policies, except Workers' Compensation, shall contain a waiver of transfer rights of recovery (subrogation) against the City, its agents, officers, officials and employees for any claims arising out of the Contractor's work or service.
- F. The insurance policies may provide coverage, which contains deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to the City under such policies. The Contractor shall be solely responsible for deductible and/or self-insured retention and the City, at its option, may require the Contractor to secure the payment of such deductible or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit.
- G. The City reserves the right to request and to receive, within ten (10) working days, certified copies of any or all of the herein required insurance policies and/or endorsements. The City shall not be obligated, however, to review same or to advise Contractor of any deficiencies in such policies and endorsements, and such receipt shall not relieve Contractor from, or be deemed a waiver of, the City's right to insist on strict fulfillment of Contractor's obligations under this Contract.
- H. The insurance policies, except Workers' Compensation, required by this Contract shall name the City, its agents, officers, officials and employees as additional insured.
- I. The making of progress payments to the Contractor shall not be construed as creating an insurable interest by or for the City or be construed as relieving the Contractor or his Subcontractors of responsibility for direct physical loss, damage or destruction occurring prior to final acceptance.
- J. Any insured loss under the policies of insurance required by this Agreement shall be adjusted with the City and made payable to City for the insured, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph K of this Article of these General Conditions. City shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged work shall be repaired or replaced, the moneys so received shall be applied on account

thereof, and the work and the cost thereof shall be covered by an appropriate Change Order.

- K. City shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within ten (10) working days after the occurrence of loss to City's exercise of this power. If such objection were made, City shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, City shall upon the occurrence of an insured loss, give bond for the proper performance of these duties
- L. If City finds it necessary to occupy or use a portion or portions of the work prior to substantial completion of all of the work, such use or occupancy may be accomplished as provided in these General Conditions, provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use or occupancy.

#### M. REQUIRED COVERAGE

The Contractor shall obtain for itself and provide the City with Certificates of Insurance indicating the scope and extent of coverage as set forth below. Required coverage's may be modified by an amendment to the Contract Documents.

##### 1. GENERAL LIABILITY

Contractor shall maintain Commercial General Liability insurance with a limit of not less than \$3,000,000 for each occurrence with a \$3,000,000 Products and Completed Operations Aggregate and \$3,000,000 General Aggregate Limit. The policy shall include coverage for bodily injury, broad form property damage, personal injury, products/completed operations and blanket contractual coverage including, but not limited to, the liability assumed under the indemnification provisions of this Contract, which coverage will be at least as broad as Insurance Service Office, Inc. Policy Form CG 000211093, or any replacements thereof. The coverage shall not exclude X, C, U.

Such policy shall contain a severability of interest provision, and shall not contain a sunset provision or commutation clause, or any provision, which would serve to limit third party action over claims.

The Commercial General Liability additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc.'s, Additional Insured, Form B, CG20101185, and shall include coverage for Contractor's operations and products and completed operations.

If required by this Contract, the Contractor subletting any part of the work, services or operations awarded to the Contractor shall purchase and maintain, at all times during prosecution of the work, services or operations under this Contract, an Owner and Contractor's Protective Liability insurance policy for bodily injury and property damage, including death, which may arise in the prosecution of the Contractor's work, service or operations under this Contract. Coverage shall be on an occurrence basis with a limit not less than \$3,000,000 per occurrence, and the policy shall be issued by the same insurance company that issues the Contractor's Commercial General Liability Insurance.

**2. AUTOMOBILE LIABILITY**

Contractor shall maintain Commercial Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence and \$2,000,000 for more than one person and property damage in the sum of not less than \$1,000,000 resulting from any one accident which may arise from the operation, actions or omissions of the Contractor or any Subcontractor in the performance of the project, and with respect to the Contractor's owned, hired, and non- owned vehicles assigned to or used in performance of the Contractor's work. Coverage will be at least as broad as coverage code 1, "any auto", (Insurance Service Office, Inc. Policy Form CA 00011293, or any replacements thereof). Such insurance shall include coverage for loading and offloading hazards. If hazardous substances, materials or wastes are to be transported, MCS 90 endorsement shall be included and \$5,000,000 per accident limits for bodily injury and property damage shall apply.

**3. WORKERS' COMPENSATION**

The Contractor shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor's employees engaged in the performance of the work; and, Employer's Liability insurance of not less than \$1,000,000 for each accident, \$1,000,000 disease for each employee, and \$1,000,000 disease policy limit.

In case any work is subcontracted, the Contractor will require the Subcontractor to provide Workers' Compensation and Employer's Liability to at least the same extent as required of the Contractor.

The Contractor shall furnish the City with a Certificate of Waiver of Subrogation under the terms of the Workmen's Compensation insurance. The Contractor shall defend, protect, and save harmless the City from and against all claims, suits, and actions arising from failure of the Contractor or the Subcontractor to maintain such insurance.

**4. BUILDERS' RISK (PROPERTY) INSURANCE**

The 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 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 the City has an insurable interest in the property required to be covered, whichever is earlier. This insurance shall include interests of the City, the Contractor, and all Subcontractors and Sub-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 the City. The insurance shall cover work performed under the Contract and materials, equipment or other items to be incorporated therein, while the same are located at the construction site, stored off-site, or at the place of manufacture. The policy shall cover not less than losses due to fire, mischief, weather, vandalism, malicious mischief, wind, collapse, riot, aircraft, smoke or any other casualty, including but not limited to earthquakes, tornadoes or other cataclysmic events, until the date of initial acceptance of the work. For new construction projects, the Contractor agrees to assume full responsibility for loss or damage to the work being performed and to the buildings under construction. For renovation construction projects, the 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.

Builders' Risk insurance shall be on an all-risk policy form and shall also cover false work and temporary buildings 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 Architect's service and expenses required as a result of such insured loss and other "soft costs" as required by the Contract.

Builders' Risk insurance must provide coverage from the time any covered property becomes Contractor's control and/or responsibility, and continue without interruption during construction or renovation or installation, including any time during which the covered property is being transported to the construction 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 are occupied. Builders' Risk insurance shall be primary and not contributory.

If the Contract requires testing of equipment or other similar operations, at the option of the City, the Contractor will be responsible for providing property insurance for these exposures under a Boiler Machinery insurance policy.

The maximum deductible allowable under this policy shall be \$5,000. The policies providing this insurance shall name the City, its agents and attorneys, the City Engineer, and the Design Engineer as additional insured as their respective interests shall appear.

**5. BLASTING INSURANCE:**

If the Contractor determines that the performance of the project will require use of explosives, the public liability and property damage insurance shall specifically cover all liability arising out of the Contractor's acquisition, storage and use of explosives. If work requiring use of explosives is not discovered until after the



commencement of the work, upon discovery, the Contractor shall immediately procure blasting insurance as required by this paragraph. The Contractor shall not undertake any blasting without submission to the City of a Certificate of Insurance covering all liability due to blasting regardless of amount. Any delays incurred by the Contractor in procuring blasting insurance shall not be grounds for an extension of time for completion of the project, nor for any additions to the contract price.

6. OTHER INSURANCE:

The Contractor shall carry and maintain all other insurance including Flood Insurance as may be required by Federal, State, County and City laws or ordinances. The Contractor may be required to, at the discretion of the City, maintain additional fire and extended coverage with an endorsement for vandalism and malicious mischief in his name and also in the name of the City in an amount of not less than \$100,000.00.

The Contractor may utilize up to \$2,000,000 in excess liability coverage to meet the above-required limits for insurance. Any deductibles shall be declared and the City may require deposits be made to it up to the amount of such deduction, at its sole discretion.

7. CERTIFICATES OF INSURANCE

Prior to commencing Services under this Contract, Contractor shall furnish the City with Certificates of Insurance, or formal endorsements as required by the Contract, issued by Contractor's insurer(s), as evidence that policies providing the required coverage's, conditions and limits required by this Contract are in full force and effect.

All Certificates of Insurance required by this Contract shall be identified with a bid serial number and title. A \$25.00 administrative fee shall be assessed for all Certificates received without the appropriate bid serial number and title. Each of the Certificates of Insurance shall contain a clause substantially in the following words:

**It is hereby understood and agreed that if this policy is canceled, a written notice of such cancellation shall be mailed to the City of Sedona within ten (10) working days.**

Such insurance coverage obtained by the Contractor other than Workmen's Compensation Coverage, shall name the City, the City Engineer, the Design Engineer, and their directors, officers, principals, agents, attorneys, and employees as Additionally Insured.

Insurance evidenced by these certificates shall not expire, be canceled, or materially changed without fifteen (15) days prior written notice to the City.

All certificates of insurance and endorsements required to be purchased by Contractor pursuant to this Article shall be filed with the City. Certificates shall be

acceptable to City. If a policy does expire during the life of the Agreement, a renewal certificate of the required coverage must be sent to the City not less than five days prior to expiration date.

Each certificate of insurance shall include the job site and project number. Coverage shown on certificate of insurance must coincide with the requirements in the text of the Contract Documents.

## **9. SCHEDULE OF CONSTRUCTION**

- A. The Contractor shall submit to the City within five (5) days after award of Contract, or as may be otherwise requested by the City, a schedule showing the order in which the Contractor proposes to carry on the work and at a rate sufficient to successfully construct all of the Work set forth in the Contract Documents within the Contract Period. Such schedule shall show the dates at which the Contractor will start and complete the several parts of the Work. The schedule shall identify the following items if applicable:

1. Potholing.
2. Mobilization.
3. Roadway work to be broken down at a minimum, on a street by street basis.
4. Pipeline work to be broken down on a manhole to manhole basis and individual pump station construction or abandonment.
5. Site prep.
6. Drainage improvements prep and construction.
7. Ramp prep, construction and finish.
8. Sidewalk prep, construction and finish.
9. Bridge prep, abutment construction, bridge construction, bridge placement, and finish.
10. Traffic control.
11. Demobilization
12. SWPPP.
13. Other items as applicable and/or listed in the bid schedule.

The schedule shall also show the order of construction and delivery dates at which the Contractor will start and complete the several other parts of the Work, the order of construction and delivery dates of critical materials and equipment along with monthly payment estimates, dates for submittal of working drawings and shop drawing to the Engineer for review, and the name of the project superintendent. The City shall be notified in writing of changes in the project superintendent. The schedule shall be subject to review and comment by the City as per MAG specifications section 108.4. The schedule shall be binding on the Contractor and shall be complied with by the Contractor unless, for good cause shown, a modification of the schedule shall be requested in writing to and approved by the City. The schedule shall also:

1. Be updated with each progress billing.

2. Include a detailed two week look ahead, indicate work requiring inspection, and be updated at each progress meeting.
3. Show work tasks progress in time periods of seven days or less unless otherwise approved by the Engineer.
4. Identify the critical path(s) for the work and task float.
5. Identify tasks corresponding to bid item descriptions when possible. Less comprehensive task designations may be used to comply with 2 above.
6. Conform to any time and location constraints identified in permits and the contract documents.
7. Span the current contract date to the end of the contract time.
8. Be submitted in an electronic format compatible with Microsoft Project Standard 2007, and hard copy format.
9. Identify long lead items.

The schedule format (size, color, type format) shall be such that the different tasks, durations, critical path and durations can be easily distinguished. The Contractor shall also provide a listing of tasks and durations with the schedule. If the schedule and list is being provided prior to a Notice to Proceed it need not include dates for start and completion of tasks. Any schedule and list provided after the Notice to Proceed has been issued shall include dates. A schedule and list shall be provided on the date of the Notice to Proceed. The Contractor shall begin work on the project site within five (5) working days of the Notice to Proceed, unless stated otherwise in specifications. Failure to do so is sufficient cause for termination in addition to other remedies the City may have.

- B. Where the City's operations require specific sequencing of the work, such sequencing requirements as provided for in the Contract Documents shall be followed.
- C. When progress has not kept pace within two weeks of the schedule or if otherwise requested by the City the Contractor shall update his schedule within five (5) working days of the City's written request. The revised schedule will include a description of what actions will be done by the Contractor to bring the project back on schedule. **Failure to not provide a revised schedule within one week of its request may result in the withholding of \$750 from any progress payment due.** Each written request by the City shall be considered a separate request and subject to the withholdings specified, provided it is within the following billing cycle from a previous request.
- D. The Contractor shall provide the City with a list of emergency phone numbers, addresses, pager numbers, facsimile numbers, and electronic mail addresses for contacting key personnel in the case of any after-hours emergency.
- E. The Contractor shall furnish the City with a schedule for hours of work. In it, the Contractor shall note the begin work, begin daily clean-up and daily shutdown times to be followed by the Contractor during the project unless otherwise changed. The Contractor's regular work hours on regular workdays shall be between 7:00 AM and 5:30 PM Monday through Thursday, unless otherwise stated in the specifications.

Friday work is permitted between 7:00 AM and 5:30 PM for work that does not require City inspection. This work hours timeframe shall be considered to include start-up of equipment and daily clean-up of the work area. Weekends and Holidays for the City of Sedona shall be considered non-regular work hours. Permission to work non-regular work hours shall be subject to approval by the Engineer and the provisions of General Conditions, Section 39. **The Engineer may deduct \$250 per day for work outside of approved work hours after issuance of one written warning during the course of the project.**

The City of Sedona has the following holiday schedule:

New Year's Day, January 1<sup>st</sup>

Martin Luther King/Civil Rights Day, 3<sup>rd</sup> Monday of January

President's Day, 3<sup>rd</sup> Monday in February

Memorial Day, Last Monday in May

Independence Day, July 4<sup>th</sup>

Labor Day, 1<sup>st</sup> Monday in September

Veteran's Day, November 11<sup>th</sup>

Thanksgiving Day, 4<sup>th</sup> Thursday in November AND the Friday after Thanksgiving Day

Christmas Day, December 25<sup>th</sup>

## **10. PROGRESS MEETINGS**

Periodic meetings shall be held between the City of Sedona officials, Contractor, and other affected agencies, at a standard time and place, and at a frequency to be established during the pre-construction meeting. These meetings shall be used to discuss scheduling and matters related to the project.

## **11. TAXES**

The Contractor shall be responsible for and shall include in his bid prices all applicable taxes, including but not limited to Federal, State, and Local Taxes.

## **12. ASSIGNMENTS**

The Contractor shall not assign the whole or any part of the Contract or any monies due or to become due hereunder without the written consent of the City and of the Surety on the Contractor's Bond. A copy of such consent of Surety, together with a copy of the assignment, shall be filed with the City. If the Contractor assigns all or any part of any monies due or to become due under the contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims and liens of all persons, firms, and corporations for services rendered; for the payment of all materials and equipment furnished and for payment of all materials and equipment used or rented in the performance of the Work called for in the Contract; and for the payment of any liens, claims, or amounts due the Federal, State, or local government or any of their funds.

### 13. SUBCONTRACTING

- A. Subcontractors will not be recognized as employees or agents of the City, nor as having any privity of contract with the City. All persons engaged in the work of construction will be considered by the City to be employees of the Contractor. The Contractor will be held responsible for their work and for all materials provided by them, which shall be subject to the provisions of the Contract.
- B. Each subcontract shall contain a suitable provision for cancellation or termination thereof should the Subcontractor neglect or fail to conform to every provision of the contract.
- C. Subcontractors collectively shall not perform more than fifty percent (50%) of the value of the total work required pursuant to the Contract Documents. **The Contractor agrees that should this percentage be exceeded the City may consider the Contractor in breach of this contract and/or make deductions equal to one half of one percent of the total approved contract value for each one percent of subcontracted work beyond that allowed above.** The Contractor shall perform fifty percent (50%) of the contract work using the Contractor's own organization as construed in ADOT Standard Specifications 2000 Section 108.01.
- D. The City of Sedona encourages all contractors to utilize minority and women owned businesses whenever possible.

### 14. COOPERATION AND COLLATERAL WORK

- A. In general, the Contractor shall be responsible for the scheduling and coordination of his work with any other work, which may be, carried on in the construction areas for this project by other parties or by the City simultaneously with his construction work. The contractor shall include in his bid any costs, which may be involved on his part as a result of coordinating his construction with such other activity.
- B. When two or more Contractors are employed by the City in related or adjacent work, each shall conduct his operations in such manner as to not cause any delay or hindrance to the other and shall properly connect and coordinate the execution of their respective work with the other. The City will not be responsible for damage caused by such delays, and such delays will not entitle the contractor(s) to an extension of time. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work.

If the proper execution 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 City Engineer any discrepancies between the executed work and the drawings or any defects in such work that render it unsuitable for such proper execution. The failure of the Contractor to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his own work. The exception is for defects, which may develop in the other contractor's work, after the execution of the

Contractor's collateral work that would not have been discovered before the Contractor's collateral work began.

- C. The contractor shall coordinate his work, and cooperate with any other persons or entities operating on or adjacent to the site of the project.

Where persons employed by other persons or entities are engaged in or near the construction areas for this project, and where such work on the part of said parties results in a delay in performance by the Contractor, and where such delay, in the opinion of the City Engineer, is of such nature that it could not have reasonably been foreseen or anticipated by the Contractor in time for him to take steps to prevent same, then the Contractor shall be entitled to an extension of time.

The Contractor shall promptly make good any injury or damage caused by him that may be sustained by other Contractors or employees of the City. The Contractor shall join his work to that of others and perform his work in proper sequence in relation to that of others.

## **15. LINES AND GRADES**

The Contractor shall be responsible for providing all construction staking and surveying needed to construct the facilities in accordance with the Plans and Specifications, and shall include such costs in his bid for the applicable items of work. The Contractor shall employ a surveyor licensed in the State of Arizona to perform all surveying necessary to construct this project to the lines and grades provided in the plans. The Contractor shall provide to the Engineer the Surveyor's listing of lines, grades, distances, curve information and point data (including northing, easting and elevation) used to actually establish project staking at least two working days prior to establishing subgrade, setting forms, placing pre-cast facilities, pouring concrete, installing pipe, or placing asphalt. The Contractor shall provide a set of as-built plans showing manhole and inlet inverts, rim and grate elevations, gutter elevations at 50-foot intervals, changes of grade, invert and finished grade elevations of concrete structures at the center and corners, and the inlet and outlet ends of pipes. The surveyor shall seal and designate them as as-built plans. This as-built plan is in addition to the Status As-Builts and Record As-Builts required under other provisions of these specifications. The Final contract payment shall not be due until all as-built plans have been submitted and accepted. Any work performed without complying with the Survey requirements in these specifications shall be considered unauthorized work and subject to the provisions of MAG section 105.11. As-Built plans shall be submitted in the following formats: hard copy in the same size as provided by the City to the Contractor for the contract, AutoCAD (2020, or latest edition), and .pdf.

The Contractor shall pothole utility facilities and report results to the Engineer at least two (2) working days prior to excavating for installation of roadways, asphalt patches, catch basins, underground pipes, manholes, footings, vaults, and basins. The report shall indicate any conflicts or inadequate clearances as related to the work to be performed. Failure to perform potholes and report results, as required, will result in the loss of the right to make a claim for changes in compensation and time due to conflicts, interference, protection or

other costs related to the utility, as such, a claim would have been mitigated by performing the pothole timely.

## **16. EXCAVATIONS, UNDERGROUND FACILITIES LOCATION, AND STORMWATER POLLUTION PREVENTION.**

The Contractor in the execution of the Work shall conform to all applicable Federal and State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over employment discrimination, wages and working conditions, and the construction of the Work, including but not limited to all construction codes, O.S.H.A. Requirements, and safety codes, which may apply to (1) performance of the Work; (2) protection of adjoining and adjacent property; (3) maintenance of passage-ways, guard fences or other protective facilities; and shall obtain all permits and pay for licenses and approvals necessary for the construction of the Work and give all required notices.

ARS-40-360.22 Excavations: Determining locations of underground facilities; providing information. This statute requires that no person shall begin excavation before the location and marking are complete or the excavator is notified that marking is unnecessary and requires that upon notification, the owner of the facility shall respond as promptly as practical, but in no event later than two working days. The "Arizona 811" (1-800-782-5348) (formerly Arizona Blue Stake Center) was formed to provide a more efficient method of compliance with this statute.

ARS-40-360.23 Making excavations in careful, prudent manner: liability for negligence. This statute states that obtaining information as required does no excuse any person making any excavation from doing so in a careful and prudent manner nor shall it excuse such persons from liability for any damage or injury resulting from his negligence.

ARS-40-360.28 Civil penalty: Liability. If the owner or operator fails to locate, or incorrectly locates the underground facility, pursuant to this article, the owner or operator becomes liable for resulting damages, costs and expenses to the injured party.

### **Licenses and Permits:**

The Contractor shall be required to obtain, at his expense, the appropriate licenses and permits from the City of Sedona before the start of construction. It is the duty of the Contractor to determine that all necessary permits have been obtained. Costs associated with obtaining a license are not waived.

## **Arizona Pollutant Discharge Elimination System (AZPDES) Permit**

### **A. General requirements:**

The Contractor shall comply with the AZPDES Stormwater requirements for construction sites pursuant to the requirement of the Arizona Department of Environmental Quality (ADEQ). The Contractor shall be designated as permittee and shall be responsible for providing the necessary labor and materials, and for taking the appropriate measures to assure compliance with the ADEQ requirements, as well as other Federal, State and local requirements pertaining to storm water discharges. As

the permittee, the contractor is responsible for completing, in a manner acceptable to the ADEQ, all documents required including the following:

1. Storm water Pollution Prevention Plan (SWPPP) for the project including certification form. The contractor will be required to submit for approval, update and revise the SWPPP as necessary throughout the construction of the project in order to assure compliance with permit requirements. The completed SWPPP shall be kept on the project site at all times during construction of the project.
  2. Notice of Intent (NOI) to be covered by Arizona General Permit for Arizona including certification of signature.
  3. Notice of Termination (NOT) of coverage under AZPDES (upon project completion).
- B. Regardless of whether compliance with AZPDES is required the Contractor shall prepare a Storm Water Pollution Prevention Plan. That Plan shall at a minimum address the following issues:
- Designation, maintenance and clean-up of vehicle storage, fueling, lubrication and maintenance areas
  - Clean up and off-site disposal of excess construction materials including asphalt, concrete, paints, oils, and wrapping materials
  - Daily work day clean-up of debris in work area
  - Prevention of wind born debris/Dust Control Plan
  - Prevention of erosion resulting from rain or watering activities'
  - Measures to prevent silt and debris generated by this project from migrating beyond the construction site boundaries. Measures such as trapping and removing debris and dirt generated, or other measures acceptable to the Engineer, shall be taken.
  - The Contractor shall comply with the City of Sedona General Storm Water Pollution Prevention Guidelines, this includes filing the City Notice of Intent.

C. Submittals:

1. Preliminary copies of the NOI and SWPPP shall be submitted to the Engineer two days prior to the preconstruction meeting. Any necessary revisions to the SWPPP shall be subject to review by the Engineer, prior to implementation.
2. The Contractor shall submit completed, signed NOI forms at least forty-eight (48) hours prior to the initial start of construction on the project to the Arizona Department of Environmental Quality in Phoenix, Arizona (ADEQ, 1110 West Washington Street, Phoenix, AZ. 85007). Generally, projects of less than one (1) acre may not be applicable to this requirement at this time. If the project is subject to these requirements, the Contractor shall be designated the permittee.
3. Failure by the contractor (or any of its appropriate subcontractors) to submit the NOI forms within the required timeframe shall result in delay of the start of



construction, but shall not prohibit issuance of the Notice to Proceed, at the City's sole discretion. A copy of the completed NOI shall be posted on the construction and a copy of the SWPPP shall be kept on the construction site.

**Contractor's Responsibilities:**

1. It is the Contractor's responsibility to perform inspection of all storm water pollution control devices on the project on a monthly basis and following each rainfall. The contractor shall prepare reports on these inspections and retain these reports for a period of three years following project completion. Inspection reports shall be submitted monthly to the CITY along with payment requests. The contractor shall maintain all storm water pollution control devices on the project in proper working order, including cleaning and/or repair during the duration of the project.
  2. No condition of either the AZPDES or the SWPPP shall release the contractor from any responsibilities or requirements under other environmental statutes and regulations.
  3. Upon total project completion, acceptance, and de-mobilization, the contractor shall submit its completed, signed NOT form to the ADEQ with copies to the same agencies who received copies of the NOI, thereby terminating all AZPDES permit coverage for the project.
- D. Payment: There shall be no separate payment made to the Contractor for all material, labor, and other incidental costs relating to the provision, installation, and maintenance of items relating to this permit during project construction. Such incidental costs shall include contractor costs in order to assure proper operation of the pollution-control devices installed including all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events or other runoff or releases on the project.

## **17. EXISTING UTILITIES, RIGHTS-OF-WAY, EASEMENTS**

### **A. EXISTING UTILITIES**

Because of the nature of this contract, existing utilities are not shown or indicated in these specifications, except to note that their locations are within rights of way, streets and easements throughout the City of Sedona area. The fact that utilities are not shown shall not relieve the Contractor of the following responsibilities:

1. The Contractor shall be responsible for the preservation of all existing water, sewer, storm sewer, buried transmission lines or any cable or utility. If damaged, all costs for the necessary repairs shall be paid by the Contractor.
2. The Contractor shall locate and verify the location of all existing utilities prior to any excavation. This shall be done at least two (2) days prior to excavation for

installation of project facilities or ordering equipment or materials for those facilities.

3. The Contractor shall be responsible for the location of all service lines.
4. Continuation of Service - All services shall be maintained to all areas at all times during the construction period, except when it is necessary to shut down a line to make a connection with the new line. Residents shall be given twenty-four (24) hour notice when it is known that the service will be interrupted. The Fire District shall be kept advised of the status of all fire hydrants affected by any work on this Project.
5. The Contractor is responsible for as-building all existing utilities within the improvement area (location, depth, and material).

#### B. RIGHTS-OF-WAY AND EASEMENTS

The City will furnish land, right-of-way, or easements as shown in the Contract Documents for the performance of the Work under the Contract. Contractor shall confine his operations to the land, right-of-way or easements furnished, and will restore the same to their original conditions to the extent reasonably possible prior to final acceptance of the work. Prior to construction or entry thereon, the Contractor shall obtain copies of and become familiar with any agreements and stipulations used by the City in acquiring temporary or permanent easements.

The Contractor shall remain within easement areas and rights-of-way obtained or owned by the City or easement areas the Contractor has obtained. Disturbed areas shall be reasonably restored upon completion of installation of the project improvements and related appurtenances in the easement. The Contractor shall be responsible to adhere to easement provisions whether the easement was obtained by Contractor or City. A temporary 4-foot high orange fence shall be placed to define the work area for all easements encompassing all work that occurs outside the City right-of-way. Clearing by manual means for the purpose of defining the area to be fenced shall be the only activity allowed on the easement before the fence is placed. City shall provide the Contractor with a copy of the easement agreement with the property owner, upon request. Contractor shall be responsible for all restoration of the easement as described in the easement agreement. Trees and larger vegetation shall be preserved to the maximum extent practicable.

The Contractor shall be responsible for the preservation of all existing property pins. If disturbed or damaged the Contractor shall be responsible for all costs associated with the restoration of any property pin disturbed by the Construction activities. Any property monuments, which require resetting, shall be reset under the direction of a licensed Surveyor by the State of Arizona and proper documentation recorded with the appropriate County.

Access by Residents: The Contractor shall ensure that all residents have access from the Street to their property each night. When access to a resident's property cannot be maintained during normal working hours (week days), the Contractor must personally notify the affected residents two working days in advance of the closure. Such notification shall be documented in writing to the Engineer. Emergency access shall not be blocked, for any reason without the express written permission from the owner.

Access to Public Facilities: The Contractor shall assure that safe access to facilities including, but not limited to, parking lots, picnic shelters, playgrounds, and pedestrian ways is provided. Any disruption to the public's normal use of said facilities shall not occur without the express written permission from the City.

Intersection and Driveway Maintenance: Once work has commenced in a particular street, the Contractor shall provide and maintain access facilities to all connecting streets, intersections and private driveways by ramping or surfacing with suitable materials to ensure access at all times. If in the opinion of the City, such facilities, or materials used, are not capable of supporting traffic, the Contractor shall remove the materials and provide better-suited materials, including asphalt concrete or similar, as directed by the Engineer. This work shall be considered incidental to the Project, and all costs shall be borne by the Contractor. Failure to comply with these requirements may result in stoppage of the work until corrected as determined by the Engineer, with no time extension being granted for such delay to the Project.

## **18. OPERATIONS, LAYDOWN YARD AND STORAGE AREAS**

- A. All operations of the Contractor (including laydown yard, storage of materials, supplies, and equipment) shall be confined to areas authorized by the City. **The City of Sedona does not have available construction staging or material lay down facilities, except as specified otherwise in the specifications.** The Contractor is responsible for arranging and providing for such facilities as is deemed necessary for carrying out the work of this contract. The City does not warrant or represent in any way the availability of staging or material lay down areas within the City or vicinity of the project. It is the Bidder's responsibility to make such determinations. The price paid for mobilization shall include all costs for and associated with providing construction staging and material lay down facilities necessary for constructing the project. If a mobilization item is not included in the specification, the cost for compliance with item shall be considered as included in the unit price (s) bid for the various items of work. The Contractor shall be liable for all and any damages caused by him to such premises.

The Contractor shall comply with the following, regarding laydown yards:

- Any use of vacant property adjacent to or near the project used for parking or servicing equipment and/or storing of material will require the Contractor to provide written approval from the property owner, homeowner associations

as applicable, and the filling of a temporary use permit from the City of Sedona.

- A copy of the property owner's approval shall be submitted to the Engineer, stating the use of the laydown yard for use during the construction of this project is acceptable.
- The Contractors yard shall be enclosed with a six (6) foot temporary fence.
- Storage of Gasoline will require Fire Department approval.
- Clearing or grading of the site in excess of fifty (50) CY of soil will require a grading permit. No grading will be allowed which changes the drainage path for the parcel without the approval of the City Engineering Department. All existing pipes and drainage facilities at the laydown yard will be maintained in working order at all times.
- A stabilized construction entrance will be required if the vacant property laydown yard is not already gravel or pavement. The laydown yard shall be adequately maintained to control dust and mud from leaving the property.
- Work in the laydown yard shall be scheduled so as to comply with any City noise or light Ordinances and these specifications.
- Equipment, materials, etc., shall be located so as to minimize impact to adjacent properties.
- Before any grading of any laydown yard, property corners will be located for the parcel. Any property pins disturbed by the Contractors operations will be replaced prior to final acceptance of the project.
- The Contractor shall obtain a written release from the property owner, homeowner's associations or similarly concerned parties after completion of use. A copy of the release shall be presented to the Engineer.
- Equipment and material shall not be stored in the right-of-way and/or street easement during non-work hours without permission of the Engineer. Such permission shall be subject to finding that it is impractical to move the equipment or material because of size or that permission has been granted to close the right-of-way to all traffic, including local traffic. Lack of construction yard or other staging area shall not be considered as reason to grant permission. Such permission, if granted, shall be subject to conditions determined at the sole discretion of the Engineer.

- B. The Contractor shall hold and save the City free and harmless from liability of any nature or kind arising from any use, trespass, or damage occasioned by his operations on the premises of third persons.
- C. The Contractor shall be wholly responsible for the care, compliance with law, and storage of materials, supplies or equipment delivered on the work site or purchased for use thereon. Stored materials, supplies, or equipment shall be carefully and continuously protected from damage or deterioration and so located so as to facilitate inspection by the City. The responsibility for the care and storage of materials, supplies, or equipment shall be with the Contractor whether such materials, supplies, or equipment are furnished by the Contractor or by the City. Storage of materials, supplies, or equipment shall not unduly interfere with the progress of the Contractor's Work or the work of any other contractor.

D. Traffic Control:

Adequate traffic flow shall be maintained at all times, all barricading and temporary signage for detours and traffic control must meet the standards set by the Manual of Uniform Traffic Control Devices (MUTCD) and the City Engineer. If traffic control is not a separate bid item; then, it is considered incidental to the work and shall be included as appropriate in the Contractors bid. The Contractor must also take responsibility for public safety, meaning:

1. That, except for alleyways, one lane of the roadway for each direction must be kept open at all times; OR
2. Certified flaggers must be provided to properly channel traffic at all times when two separate lanes (one each direction) cannot be maintained open; OR
3. Total closure of a roadway shall only occur with the written permission of the City Engineer. For all rights-of-ways requiring closure for any work therein, appropriate permits shall be obtained. Prior to start of construction, the Contractor shall provide the Engineer with planned traffic control methods and procedures for this project. A notice of closure for residents, along with a map showing the planned area of distribution shall be included as part of the planned methods and procedure. Proper traffic control and advance warning signage shall be in place prior to any road closure.
4. When detours or road closures are implemented an overall map showing anticipated flow of traffic shall be provided.
5. The Contractor shall have a designated person responsible for overall traffic control on-site at all times.
6. A Traffic Control Plan shall be submitted for review. The plan is intended to be a guide; Contractor shall submit any proposed revisions for approval by the Engineer.
7. Pedestrian traffic must be maintained at all times, on at least one side of the road.
8. The Contractor shall supply a Public Announcement showing closures and detours.

E. Water Use

1. All water used by Contractor for testing, compaction, dust control, or other uses related to construction, shall be obtained by the Contractor from an approved water source. The Contractor shall be responsible for all deposits, charges and fees.

Reclaimed water is available to the Contractor for dust control and other on-site construction uses at no cost to the Contractor (other than testing costs noted

below), according to the following limitations (any required water outside these limitations shall be provided by the Contractor from an approved source):

- a. Reclaimed water will be available for use by the Contractor Monday – Friday. It shall be the Contractor's responsibility to apply for and obtain a Type 2 General Water Reuse Permit (Class A+ Reclaimed Water) from ADEQ for dust control and other construction uses. Contractor shall also be responsible for the cost of fecal coliform testing. The cost of testing is \$50 for each day that water is taken for construction use.
- b. Water shall be provided from the effluent pump station wetwell at the Wastewater Treatment Plant using contractor-provided submersible pump.
- c. Contractor is responsible to supply conveyance and storage facilities for water made available by the City. Contractor shall record and report to the City on a weekly basis the date and amount of water used.

#### F. Dust and Debris Control

1. **The contractor shall cover all trucked loads of soil, rock and material that may drop from, be sifted from or blown from the vehicle. The City may require that trucks arriving with uncovered loads not be allowed to deliver material to the project, regardless of whether or not the truck is the contractor's, a subcontractor's, a service provider's, or a material supplier's vehicle. If trucks leave the site with uncovered loads the City reserves the right to do one or more of the following:**
  - a. The truck will not be allowed on the site
  - b. **The contract compensation will be reduced by \$150 per observed uncovered load. The contract time will be reduced by one day**
  - c. The Police Department may issue a citation.
2. Pine slash and/or cut down pine trees shall be removed from the City within 24 hours, including any non-working days, of being broken or cut. This measure is to minimize pine bark beetle infestation in Sedona.
3. The contractor shall take measures to prevent blowing debris and/or dust from the site.
4. Dust Control shall comply with the following:
  - a. Dust control shall be maintained at all times on the project. Spray nozzles shall be used as necessary on equipment to reduce dust. Mist shall be visible when standing adjacent to the equipment.
  - b. A Dust Control Plan shall be submitted prior to Start of Construction.
  - c. Cleanup and Dust Control shall be in compliance with MAG Section 104.1.3 and 104.1.4.
5. The contractor shall clean any dirt tracked from the project work area from streets and sidewalks using equipment and methods that will not create excessive dust. Sweeping is the preferred cleaning method. Washing of streets and/or sidewalk

and other paved areas will require special permission from the Engineer and shall be subject to conditions imposed by the Engineer. The City reserves the right to require that the Contractor to cease work that is resulting in excessive tracked mud and/or dirt from and within the project area, and to require cleaning prior to allowing the ceased work to continue. The exercise of the City's right and impacts there from shall not provide a basis for claim by the contractor. Failure of the Contractor to cease work shall be sufficient reason for the City to reduce the contract time by one calendar day per incident, at the City's sole discretion.

6. Dirt, debris, wastewater and other debris shall not be disposed of in stormwater facilities and/or natural drainage channels. The City may require inspection of stormwater facilities and/or natural drainage channels prior to and during the work to verify compliance with this requirement. The City may require the contractor to clean stormwater facilities and/or natural drainage channels if the contractor has disposed of material to them. Final Completion will not be issued until all stormwater facilities have been inspected and approved.

#### **G. Open Trenches**

MAG Specification Section 601.2.10 is modified to limit the length of open trench to 1100 feet within the project. An open trench includes any longitudinal excavated area 3 inches or more below adjacent land which has settled or been left lower intentionally. All open trenches shall properly marked and protected so as to warn pedestrians and vehicular traffic of a low area.

### **19. RIGHT-OF-ENTRY**

Contractor shall provide to the City, Architect-Engineer, or representative of the Federal, State, County, District and Municipal governmental officials and services, the proper facilities for access to the Work, whenever it is in preparation or progress.

### **20. ACCESS AND DRAINAGE**

The Contractor shall keep a sufficient clear area around fire hydrants to permit their full and effective use in case of fire. The Contractor shall keep natural drainage and watercourses unobstructed by spoil piles, material storage, or any other operations, or provide for other equal courses effectively placed.

### **21. SANITARY CONVENIENCES**

The Contractor shall furnish the necessary sanitary conveniences, properly secluded, for the use of work persons during construction, and these conveniences shall be maintained in a manner that will be inoffensive and in compliance with Federal, State and local health and sanitation requirements.

### **22. CLEANUP PRACTICES**

- A. The Contractor shall at all times during the progress of the work maintain a reasonably clean job site, this includes, but is not limited to, keeping signs clean and legible, minimizing mud, rock, and dirt on roadways, and keeping ditches free of trash and construction materials. If in the opinion of the Engineer, excessive dust, mud or debris exists at the job site, the Contractor shall immediately remove said material as directed. All costs associated with this work shall be borne by the Contractor. The location of debris and material stockpiles shall be as directed by the Engineer.
- B. The Contractor shall begin his daily clean-up process at a typical time agreed to by the City at the pre-construction meeting. If the Contractor's operations and daily shut-down exceed a forty hour work week or eight hour day then the City will be entitled to withhold a portion of the Contractor's progress payment for City "overtime" work pursuant to Section 32 and 39, unless authorized by the Engineer.
- C. The site shall be kept clean of trash and debris including but not limited to, loose construction materials, such as sand, cement, lime, wood pieces, building paper, and other miscellaneous paper. All trash and debris shall be placed in an appropriate number of approved containers and moved and disposed of off the site daily in a location where it will not be possible to be dispersed. No burning of trash or debris will be permitted on the site, except where designated by the Engineer. The laydown yard shall have a minimum of one container of appropriate size at all times.

**When site daily clean-up has not been kept up as requested in writing by the City the Contractor shall bring the site into compliance with the City within 24 hours or the City shall withhold \$350 for each day out of compliance.**

- D. Before final payment, the Contractor shall remove all rubbish, excess materials, temporary structures, and equipment. All parts of the work shall be left in a neat and presentable condition. Excess mounds of earth shall be leveled and ruts and depressions filled, such that the completed work is attractive. If in the opinion of the Engineer, the Contractor does not maintain the Construction Site in a safe and clean condition, or does not adequately clean up the site at the completion of the work, or rectify any valid complaints of damage to property resulting from the Construction, the City may clean up or rectify damage and charge the costs thereof to the Contractor.
- E. The Contractor shall be responsible for locating sites and making arrangements for disposal of all material removed from the site. This includes concrete, asphalt, unsuitable or unstable trench material and any other trash, rubbish or debris generated as a result of construction. Asbestos, hazardous substances or materials, hazardous waste or any other regulated substances or materials shall be disposed of in accordance with all applicable federal, state and local regulations.
- F. All vegetation and improvements removed from easements by the Contractor shall be removed or repaired by the Contractor in accordance with the easement agreement with the property owner, the same being done at no additional cost to the City.



## **23. PLANS AND SPECIFICATIONS**

- A. The City will provide the Contractor with four (4) sets of plans, drawings, and specifications after the execution of the Contract. If additional plans, drawings, and specifications are required, the Contractor shall compensate the City for it.
- B. When, in the opinion of the City, revised partial plans, drawings and specifications are required to clarify or reflect authorized changes or additional work the City shall provide four (4) copies of such revisions to Contractor. The Contractor must pay for any additional copies. Contractor shall immediately post such revisions to his record set of Contract Documents.
- C. The plans, drawings, and specifications are the property of the City, and are furnished to the Contractor for the construction of Work under the Contract only.
- D. The data given in the specifications and shown on the plans and drawings is believed to be accurate, but the accuracy is not guaranteed. The Contractor must confirm all levels, locations, measurements, and verify all dimensions on the job site prior to construction and adapt his Work into the exact limits of construction. Scale measurements taken from plans are only for reference.
- E. Drawings showing the details of the Work specified are designated "plans" or "drawings" and together with the specifications form an integral part of the Contract Documents.

## **24. CORRELATION OF DOCUMENTS**

- A. Plans, drawings, and specifications are cooperative and supplementary. Portions of the Work, which can best be illustrated by the plans or drawings, may not be included in the specifications and portions best described by the specifications may not be depicted on the plans or drawings. All items necessary or incidental to completely construct or erect the Work specified shall be furnished, whether called for in the specifications or shown on the plans or drawings. Unless otherwise stated the plans and specifications shall be considered to require construction or erect of a complete and operable facility.
- B. Special Conditions shall take priority over Technical Specifications, which shall take priority over General Conditions; large-scale drawings shall take precedence over small-scale drawings. In case of a disagreement between the plans, drawings, and specifications, or within a document itself, the better quality and the greater quantity of work shall be estimated and included in the bid and contract sums and the matter drawn to the City's attention for further decision, and possible issuance of an addendum.

## **25. SHOP DRAWINGS, SAMPLES, AND OPERATOR'S INSTRUCTION**

- A. The Contractor shall furnish all Shop Drawings and Samples required by the Contract Documents. Shop Drawings of equipment and devices offered by the Contractor for approval of the City shall be in sufficient detail to adequately show construction and

operation. The above material shall be submitted to the City for review in electronic format (.pdf and/or .dwg). Shop drawings submitted as herein provided by the Contractor and approved by the City for conformance with the design concept shall be executed in conformity with the Contract Documents unless otherwise required by the City.

- B. Work performed in connection with the fabrication, manufacture, shipment, or purchase of material or equipment prior to approval as specified shall be at the Contractor's sole risk and responsibility.
- C. Shop Drawings and Samples shall be accompanied by a letter of transmittal indicating that the Contractor has reviewed and approved the submittal. The transmittal shall give a list of the numbers and dates of the submittal, and shall be in the form required by the City. Any re-submittals shall show numbers and dates of previous submittals. Shop Drawings shall be complete in every respect and bound in sets.
- D. The Contractor shall submit all Shop Drawings and Samples (submittals) sufficiently in advance of construction requirements to allow ample time for checking, correcting, resubmitting, and rechecking to avoid any delay in progress of the Work. In no case however shall this time be less than five (5) working days without the consent of the Engineer. In the case of submittals for pump installations and similarly complex equipment the minimum timeframe shall be twenty (20) working days. This timeframe shall also apply to resubmittals. If more than five (5) submittals are made in a week the minimum City review time shall be extended by five (5) days for each submittal. The Contractor shall be solely responsible for delays and costs related to resubmittals or untimely submittals.
- E. Shop Drawings or Samples submitted shall be marked with the name of the Project, numbered, and bear the stamp of approval of the Contractor as evidence that the Shop Drawings and Samples have been checked by the Contractor. Any shop drawings or samples submitted without this stamp of approval shall not be considered and shall be returned to the Contractor for resubmission. If the Shop Drawings or Samples show variation from the requirements of the Contract, the Contractor shall call such variation to the City's attention in his letter of transmittal in order that, if acceptable and City gives written approval to the variation, suitable action may be taken for proper adjustment.
- F. By approving and submitting shop drawings and samples, the Contractor thereby represents that he has determined and verified all field dimensions and measurements, field construction criteria, materials, catalog numbers, and similar data, and that he has checked, and coordinated such submittals with the requirements of the Work and the Contract Documents.
- G. If a Shop Drawing or Sample, as submitted, indicates a departure from the Contract requirements which the City finds to be in the interest of the City and to be so minor as not to involve a change in the contract price or time for performance, it may approve

the Drawings or Samples; provided, however, such departure is slight in nature and does not affect the design concept of the Work.

- H. All items of standard equipment shall be the latest model at time of delivery.
- I. When Shop Drawings are submitted for the purpose of showing the installation in greater detail, their approval shall not excuse the Contractor from requirements shown on the plans and specifications.
- J. Shop Drawing and Sample submittals not conforming completely with the above requirements shall be returned to the Contractor, without action, for re-submittal and the resulting delay shall be entirely the responsibility of the Contractor.
- K. The City's check and approval of Shop Drawings and Samples, specifications, and descriptive literature submitted by the Contractor shall be only for general conformance with design concept, as otherwise provided, and shall not be construed as:
  - 1. Permitting any departure from the Contract requirements;
  - 2. Relieving the Contractor of the responsibility for any error in details, dimensions, or otherwise that may exist in such submittals;
  - 3. Constituting a blanket approval of dimensions, quantities, or details of the material or equipment shown; or
  - 4. Approving departures from additional details or instruction previously furnished by the City. Such check or approval shall not relieve the Contractor of the full responsibility of meeting all of the requirements of the Contract Documents.
- L. One (1) electronic copy and four (4) sets of bound operator's instructions and maintenance manuals shall be furnished by the Contractor for equipment furnished under the Contract that is specially listed or that is considered to be of a special or complex nature. Operator's instruction and maintenance manuals shall include, in part, detailed lubrication drawings showing type and frequency of lubrication. Detailed parts drawings shall show location, name and catalog numbers of parts.
- M. One (1) electronic copy and four (4) sets each of bound service parts manuals shall be furnished by the Contractor for all items of standard manufacture.
- N. All operator instructions, maintenance, and parts manuals shall be bound in permanent binders satisfactory to the City and shall be furnished to the City before final acceptance of the installation by the City.
- O. Four (4) copies of any manufacturer's guaranty/warranty or certificate for any type of material or equipment provided shall be submitted to the City prior to final acceptance of the Work by the City.

## **26. DRAWINGS SHOWING CHANGES DURING CONSTRUCTION**

Throughout the progress of construction, the Contractor shall maintain a careful up-to-date record of all changes on the plans and drawings during actual construction. *With each progress payment invoice the Contractor shall provide a "Status As-Built" showing all work completed to date.* Callouts will identify type, size and quantity of each item installed. The Contractor shall annotate all sewer taps stationing upstream to downstream using swing ties from adjacent manholes or other method the Engineer may approve in writing. Upon completion of Work, and prior to acceptance by the City, the Contractor shall file with the City one set of complete contract drawings with all changes and Contractor's field construction notes neatly and legibly recorded thereon. Such drawings shall include but not be limited to, the exact routing and clearances, if changed from drawing location, of sewer, water, gas, oxygen supply, condenser water lines, fuel oil tanks and lines, fire protection lines, and any other major buried utility lines and routing of buried electrical feeder lines and changes to routing of conduit runs which are buried or concealed in concrete slabs. The Contractor shall furnish such As-Built utility and drainage invert and rim elevations as well as gutter, top of curb shots and horizontal location of valves and hydrants placed as a part of this construction. This information is for use by the City in the preparation of record "As-Built" Drawings. Curb and gutter shots shall be spaced no further than 50 feet apart and shall include any significant bends, drops or other deviations from a straight horizontal or vertical alignment.

## **27. MATERIALS, EQUIPMENT, SUPPLIES, SERVICES, AND FACILITIES**

- A. It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, equipment rental, water, heat, light, fuel, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the Work in a workman like manner within specified time.
- B. No materials, equipment, or supplies for the Work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
- C. Equipment shall be properly equipped with safety devices including but not limited to spark arrestors, back up alarms, reflectors, signage, labeling, and lights.
- D. At least one (1) set of all appropriate Material Safety Data Sheets shall be maintained in a common location on the project site at an identified location during all working hours.

## **28. WORKMANSHIP, MATERIALS, AND EQUIPMENT**

- A. All material and equipment furnished by the Contractor shall be new and unused and shall strictly conform to the Contract Documents. Competent labor, mechanics and tradesmen shall be used on the Work. Experienced manufacturer's representatives shall be used to supervise the installation of equipment as may be required by the City. Any special tools or equipment, which may be required, shall be provided by the Contractor.

- B. The acceptance at any time of materials or equipment by or on behalf of the City shall not be a bar to future rejection if they are subsequently found to be defective, inferior in quality or uniformity to the material or equipment specified, or are not as represented to the City.

## **29. QUALITY OF MATERIALS IN ABSENCE OF DETAILED SPECIFICATIONS**

- A. Where the Contract requires that materials or equipment be provided or that construction work be performed, and detailed specifications of such materials, equipment or construction work are not set forth, the Contractor shall perform the work using materials and equipment as described in the specifications. Constructed or installed as described therein, and shall follow standard practices in the performance of construction work. The work performed shall be in conformity and harmony with the intent to secure a good, serviceable standard of construction.
- B. All tests and re-tests unless otherwise provided, shall be in accordance with the pertinent sections of the latest edition of the standards applicable to the material or devices to be tested. A partial list of the principal societies referred to and their Abbreviations follows:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society of Testing Materials
AWWA	American Water Work Association
CPI	Clay Pipe Institute
CS	Commercial Standards
FS	Federal Specifications
NEC	National Electric Code
TMCA	Tile and Marble Contractors of America

## **30. VARIATIONS FROM ESTIMATED QUANTITIES**

When unit prices are utilized in the Contract Documents, it may be reasonably expected that there could be variations in final quantities from the estimated quantities by reason of actual conditions and/or change orders. An adjustment in compensation may be allowed only to the following extent:

- A. For a decrease greater than twenty percent (20%) in either the total cost of the contract or the total cost of a major item and when a reasonable cost analysis supports an increase in the pro rata share of fixed cost chargeable to this item in total, an adjustment in the monies due the Contractor may be made. The total amount, including any adjustment, will not exceed eighty percent (80%) of the original lump sum contract

amount or, for a unit price item, the total amount, including adjustment, will not exceed eighty percent (80%) of the original extended unit bid price.

- B. For an increase greater than twenty percent (20%) in either the total cost of the contract or the total cost of a major item, any adjustment made will only apply to that cost in excess of one hundred twenty percent (120%) of the original bidding schedule. If either party presents a reasonable cost analysis that shows a change in the pro rata share of fixed costs chargeable to this item in total, an increase or decrease adjustment may be made. This increase or decrease adjustment will be made on such basis as is necessary to cover a reasonable estimate of cost, plus an allowance, not to exceed ten percent (10%), for overhead and profit.
- C. A major item is an item whose total cost, determined by multiplying the bidding schedule quantity and the contract unit price, is equal to or greater than the amount indicated below. A major item will remain a major item unless it is completely eliminated. Compensation for a completely eliminated major item shall be limited to the amounts indicated, but not to exceed the amount demonstrated by information provided to show the cost impact of the deletion, not including anticipated profit.

Total Contract amount as awarded equal to or greater than (in dollars)	But is less than (in dollars)	A major bid item Shall be equal to or greater than the following amount (in dollars)	If the item is completely eliminated compensation shall be limited to no more than (in dollars)
\$0.00	\$1,000,000	\$50,000 or 10% of the Contract amount as awarded	\$2,000
\$1,000,000	\$5,000,000	5% of the Contract amount as awarded	\$5,000
\$5,000,000	\$20,000,000	2.5% of the Contract amount as awarded	\$7,500

- D. For either an increase or decrease in cost, no claim shall be made by the Contractor for any loss of anticipated profits.

### 31. PROGRESS PAYMENTS

- A. When monthly progress payments are authorized, the Contractor shall, on the date determined during the pre-construction meeting, submit to the City an itemized application for payment, supported by "Status As-Builts" and such data substantiating the Contractor's right to payment as the City may require, on forms acceptable to the City. Progress payments shall be made no more than once each calendar month and provided that there are a minimum fifteen (15) calendar days between payments, unless

- otherwise authorized on a payment-by-payment basis by the City Engineer or City Manager. Progress payments are subject to retainage of ten percent (10%) with possible reduction to five percent (5%) in accordance with the provisions of Arizona Revised Statutes.
- B. The Contractor shall provide to the City at the time of payment, a waiver and release to date from the Contractor and each and every Subcontractor and material supplier whose work or materials are included in the application for payment, evidencing that said Contractor, Subcontractor or material supplier has been paid in full to date.
  - C. Unless otherwise provided in the Special Provisions, payment will not be made on account of materials or equipment not incorporated in the work, at the time of a request for payment, but delivered and stored at the site. Similarly, payment will not be made for materials or equipment stored at some other location unless agreed upon in writing. If payment is allowed per the Special Conditions, payment for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the City to establish the City's title to such Materials or equipment or otherwise to protect the City's interest, including applicable insurance and transportation to the site for those materials and equipment stored off-site.
  - D. The Contractor warrants that title to all materials, supplies, and equipment covered by an application for payment, whether incorporated into the Work or not, shall pass to the City, upon receipt of payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances; and that such materials, supplies or equipment furnished or installed comply with the applicable requirements of the Contract Documents.
  - E. The passing of title to the City as herein provided shall not be construed as relieving the Contractor of the sole and complete responsibility for:
    - 1. The care and protection of the materials, supplies, equipment, and Work for which payment has been made.
    - 2. The restoration of any damaged or destroyed Work, materials, supplies or equipment. Such responsibility shall continue until all Work under the Contract has been completed and accepted by the City.
  - F. Under no circumstances shall payment constitute a waiver of the City's right to require the Contractor to fulfill all of the terms and conditions of this Contract.
  - G. INVOICE PROCESSING: The City will not accept inaccurate, illegible, or incomplete invoices (requests for payments). Invoices shall be hard copy, with original signature. Electronic or facsimile signatures are not acceptable on the invoice.
    - 1. The City distributes payments on every other Friday, beginning on 01/09/20 for calendar year 2022, unless holidays dictate otherwise.

2. The Engineer must receive an acceptable, correct invoice with required supporting documentation not later than close of business on the Wednesday, nine (9) calendar days prior to the expected check distribution day.
3. For projects longer than sixty (60) calendar days duration, each request for payment shall be accompanied by a progress schedule, effective through the invoice period. The City shall not release a payment until the contractor provides an acceptable, accurate, and updated project schedule.

### **32. PAYMENT WITHHELD**

- A. The City may decline to certify payment on account of subsequently discovered evidence or observations, may nullify the whole or any part of any payment certificate previously issued to such extent as may be necessary to protect the City from loss on account of any one or more of the following:
  1. Defective Work not remedied.
  2. A reasonable doubt that the Contract can be completed for the balance then unpaid.
  3. Unsatisfactory prosecution of the Work.
  4. Not maintaining a current project schedule.
  5. Not providing adequate progress payment "Status As-Builts".
  6. Deductions for not conforming to daily clean-up requirements.
  7. Deductions for reimbursement of City overtime inspection.
  8. Liquidated damages payable by the Contractor.
  9. Disputed Work or Materials.
  10. Failure to comply with other material provisions of the Contract.
  11. Third-party claims filed or reasonable evidence that a claim will be filed.
  12. Failure of the Contractor or Subcontractor to make timely payments for labor, equipment, and materials.
  13. Damage to the Owner.

In addition, the City reserves its rights under ARS Sections 32-1129.01 and 34-221I.

- B. When any of the above problems are resolved, payment shall be made for amounts withheld pursuant to Article 31.

### **33. MEASUREMENTS**

- A. The itemized Application for Payment will be used by the Engineer as a basis for evaluating requests for payment, except in cases where unit prices have established the basis for payment shall include as a minimum the following items:
  1. Separate cost itemizations for mechanical, piping, structural, electrical instrumentation, painting, pre-engineered structures, and architectural finish work.
  2. Separate cost line items, showing both purchase and installed cost, for the major equipment items listed in the bidding schedule.



3. A separate line item for mobilization not to exceed ten percent (10%) of the total Contract amount. This limitation shall apply even when a bid item for mobilization is shown in the bid schedule, unless the Engineer has assigned a fixed cost for the item. Amounts excess of this limitation shall be included on the final payment.
  4. A separate line item for demobilization, not to exceed one-half of one percent (0.5%) of the total Contract amount. This limitation shall apply even when a bid item for demobilization is shown in the bid schedule, unless the Engineer has assigned a fixed cost for the item. Amount in excess of this limitation shall be included on the final payment.
  5. Separate line items for earthwork, demolition and clearing and grubbing, where appropriate. Measurement and payment for the various items shown by the Contract Drawings and described in the construction Specifications, and comprising the completed work, shall be subject to this Article.
- B. The contractor may subdivide any of the lump sum bid items in the proposal as necessary to identify items per (A) above, however the neither the total bid or the total of any subdivided bid item line shall exceed the total in the bid proposal as awarded.
- C. Payment for each item shall constitute payment in full for the furnishing of all materials, equipment, appurtenances, labor, plant and tools necessary to provide a complete workmanlike, finished, and satisfactory project, as shown by the Contract Drawings and described in the Specifications. Each item shall be completed with all necessary connections, testing, painting and related work accomplished to provide for the satisfactory use and/or operation of the item. No additional payment will be made for work related to each item, unless specifically noted or specified.
- D. No additional payments will be made for work related to any item unless specifically noted and called for in the Bid Proposal. Payment will be made at the unit price or lump sum price bid in the Bid Proposal.
- E. Measurement will be on the completed work in place, with no allowance for waste, and as may be more particularly described in the description of the various items set forth in the Specifications and as shown by the Contract Drawings.
- F. The quantities set forth in the Bid Proposal are used for the purpose of determining the basis of the Award of the Contract, and may be varied by the Engineer to conform to the requirements of the work as set forth in the Contract Drawings, and the Contractor agrees to perform the work on the basis of the prices bid for the items contained in the Bid Proposal regardless of whether or not the items or units are decreased or increased.**
- G. The Engineer shall have the right to order omitted from the Contract any item or a portion of the estimated quantity for any item found unnecessary to the work without violating the Contract or Performance Bond.
- H. Except in cases where unit prices form the basis for payment under the Contract, the Contractor shall, within twenty (20) days of receipt of the notice to proceed, submit a

breakdown of the Contract price showing the value assigned to each part of the work including an allowance for profit and overhead. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents his estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the Engineer as one of the bases for evaluating requests for payment.

- H. Mobilization and Demobilization: Payment for Mobilization shall include the cost for setting up Project offices and moving Equipment to the site, storage facilities, obtaining permits, and all other items required to prepare the Project site for commencement of construction activities. Demobilization shall include removal of Contractor's facilities and Equipment, and final cleanup, and all other items required to complete Demobilization.

Payment for mobilization shall be in accordance with Section 901 of ADOT Standard Specifications for Road and Bridge Construction (most current edition), except as modified by this section and General Conditions Section 18, 33, and 66. Retention shall apply to mobilization payments. The first payment for mobilization shall be contingent on providing:

1. A traffic control plan that has been approved by the Engineer
  2. The Storm Water Pollution Control Plan provisions are in place per the SWPPP in the Civil Plans
  3. The Contractor shall have a City of Sedona or ADEQ NOI for stormwater pollution prevention
  4. The Project Sign has been posted
  5. A complete project schedule as required by the General Conditions, Section 9.
- I. Excavation-Generally: The excavation rates shall include the amount for working in such a manner as not to interfere with the stability of adjacent structures and properties, for the costs of all timbering or other support required, for all necessary measures to keep the excavation free from water and sewage whether affected by floods, storms or otherwise, for working space, refilling, consolidating and disposal of surplus material from temporary spoil heaps or disposal as directed by the Engineer. The rate shall apply to the excavation in any material, including rock.

No extra payment will be made if the position of the work as set out will not allow the use of a mechanical plant or necessitates the cartage to temporary spoil heaps of excavated material and the reloading and cartage back for refilling of excavations or disposal.

### **34. PAYMENT, USE OR OCCUPANCY OF WORK**

- A. No progress or final payment, nor any partial or entire use or occupancy of the Work or improvement, nor acceptance thereof, by the City shall be evidence of the performance of the Contract or construed to be acceptance of defective work or

improper materials, either wholly or in part. The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute.

- B. The City shall have the right to take possession of, use, or occupy any completed or partially completed portions of the Work, notwithstanding the time for completing the entire Work or any portions, may, or may not, have expired. Such taking possession, use or occupancy shall not be deemed an acceptance of any Work until all Work has been completed in accordance with the Contract Documents. If such prior use or occupancy increase the cost, or delays the Work, the Contractor shall be granted such extra compensation or extension of time, or both, as City may determine.
- C. Consent of Surety and endorsement from the insurance carrier or carriers permitting prior occupancy or use of any completed or partially completed portions of the Work by the City shall be secured by the Contractor. Contractor and his Surety and enforcement from the insurance carrier or carriers permitting prior occupancy or use of any completed or partial completed portions of the Work by the City shall be secured by the Contractor. Contractor and his Surety and insurance carrier hereby agree that such consent shall not be unduly withheld.

### **35. CLOSEOUT PROCEDURE**

When the Contractor considers that the Work, or a portion thereof which the City has allowed to be accepted separately, is substantially complete, the Contractor shall prepare a letter stating the work, or a portion of the work, is substantially complete and submit to the City a comprehensive list of items to be completed or corrected. Substantial completion shall not operate to change the contract time to which liquidated damages are applicable. Reduced liquidated damages are chargeable for a project or portions thereof which have separately specified damages, if there are items of work remaining to be performed relative to such work once full substantial completion status has been attained. In such cases the amount of liquidated damages due shall be twenty-five percent (25%) of the unreduced liquidated damage amount stated in the contract, and shall not begin until after the contract completion date.

The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the City will make an inspection to determine whether the Work or designated portion thereof is substantially complete. The City Engineer shall have the sole right to determine if a Work or portion thereof is substantially complete. If the City's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the City. The Contractor shall then submit a request for another inspection by the City to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the City will prepare a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Contractor and City for security, maintenance, heat, utilities, damage to the Work and

insurance, and shall fix a reasonable time within which the Contractor shall finish all items on the list accompanying the Certificate. If the Contractor does not complete the items within the time fixed by the City, the City, upon ten (10) working days notice, shall have the option to complete the uncompleted Work for the Contractor and deduct the cost from any amount due to the Contractor, whether or not the contract completion date has passed.

The Contractor may request a written statement from the City Engineer of what constitutes substantial completion by writing a letter of "Notice Of Intent to Declare Substantial Completion." The letter shall be sent no later than fifteen (15) working days prior to the anticipated date of Substantial Completion. The letter shall state what items the Contractor intends to complete prior to declaring substantial completion and what date substantial completion is anticipated by. The City Engineer shall respond to the letter within ten (10) working days accepting or adding to the list of items to complete prior to substantial completion. The City Engineer's response to the list shall not prevent the City Engineer from amending the list within a reasonable time prior to the anticipated date of substantial completion, or from considering factors not known at the time the response was prepared.

### **36. FINAL PAYMENT**

- A. Prior to receiving final payment, the work shall be completed according to the Contract Documents, as determined by the City. Retention shall be as provided in A.R.S. §34-221. This includes, but is not limited to, submittal of complete as constructed documents.
- B. The acceptance of final payment by the Contractor shall operate as a release to the City of all claims by the Contractor for all things done or furnished in connection with the Contract and for every act and neglect of the City, and others relating to or arising out of the Work under the Contract, except for claims made in writing and still unsettled, and specifically itemized at the time the final payment request is made.
- C. No payment, final or otherwise, shall operate to release the Contractor or his Surety from any obligations under the Contract or under the Performance Bond or Labor and Materials Payment Bond, including, but not necessarily limited to anyone or more of the following:
  - 1. Obligations arising from or relating to latent defects.
  - 2. Faulty or defective work or material, which does not comply with the requirements of the Contract.
  - 3. Failure of the construction, equipment, or fixtures to perform properly in accordance with the requirements of the Contract Documents.
  - 4. Unsettled claims.
  - 5. Claims for non-payment of laborers, mechanics, material men, or suppliers, or for equipment used or rented.
  - 6. Claims under the maintenance requirements of the Contract Documents or any special warranties provided for in the Contract Documents.

### 37. SUPERVISION BY CONTRACTOR

- A. The Contractor or his designated representative will be required to give personal attention to the fulfillment of this Contract and to keep the work under control and in accordance with the Schedule for Completion. The contractor shall provide a competent Representative with full authority to receive and execute such instructions, orders or directions as the Engineer, or his agents or representatives may issue in connection with the Contract.

The Contractor will supervise and direct the work at all times. He has the obligation to determine the means, methods, techniques, sequences and procedures of construction, except in those instances where the City, to define the quality of an item of work, specifies in the Contract a means, method, technique, sequence or procedure for construction of that item of work. The Contractor shall be responsible to perform the Work so that the quality of the Work conforms to the plans and the specifications while in progress and as finally completed.

- B. Instructions and information given by the City, Engineer, or his agents or representatives to the Contractor's representative on the work shall be considered as having been given to the Contractor. Before any work is done at the job site, the Contractor shall give written notice to the Engineer stating the name, home address and telephone number of the Contractor's representative. The Contractor shall also inform the Engineer in writing prior to any change of representative. A statement naming more than one person to be in charge depending upon which one is present at the time will not be acceptable.
- C. The Contractor shall file with the Engineer the names, addresses, and telephone numbers of representatives who can be contacted at any time in case of emergency. These representatives must be fully authorized and equipped to correct unsafe or excessively inconvenient conditions immediately on order of the Engineer.
- D. The Contractor shall pay and cause his Subcontractors to pay any and all accounts for labor, services, equipment, and materials used by the Contractor and his Subcontractors during the performance of work under this Contract, including all applicable taxes and insurance. Such accounts shall be paid as they become due and payable within the time limits set forth by law. The Contractor shall furnish proof of payment of such accounts to the City.
- E. **The plan or method of work suggested by the City or the Engineer to the Contractor but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor. The City and the Engineer assume no responsibility therefore and in no way will be held liable for any defects in the work which may result from or be caused by the use of such plan or method of work.**

### 38. WEATHER

- A. During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work where acceptable quality or efficiency will be affected by unfavorable conditions shall be constructed while those conditions exist. It is expressly understood and agreed by and between the Contractor and the City that the Contract time for 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.
- B. The Contractor shall not be assessed liquidated damages, nor the cost of engineering and inspection during any delay in the completion of work caused by Acts of God, acts of the public enemy, acts of a public agency or owner, or a utility to provide for removal or relocation of existing utilities, unless such delay is caused in whole or in part by Contractor or any of its Subcontractors.
- C. A rain, windstorm, high water or other natural phenomena for the specific locality of the work, which might reasonably have been anticipated from historical records of the general locality of the work, shall not be construed as abnormal. It is hereby agreed that rainfall greater than the following cannot be reasonably anticipated:
  - 1. Daily rainfall equal to, or greater than, one inch during a month when the monthly rainfall exceeds the normal monthly average by fifteen percent or more.
  - 2. Daily rainfall equal to, or greater than one and one-half (1-1/2) inch at any time.

Rainfall data shall be collected at the job site by the Contractor.

### **39. OVERTIME**

Any Work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the City unless otherwise provided in the Contract Documents.

The Contractor is responsible for completing his work activities within regular working hours. Should the Contractor elect to run his crews more than a typical 10-hour day, he may elect to with prior coordination with the City. Any inspection, which is required beyond the City of Sedona's Standard 10-hour work day due to extended work hours or late daily cleanup, is subject to a withholding by the City from the Contractors progress payment for the cost of the overtime inspection during that period. The amount withheld shall be itemized by person and reflect any overtime premiums paid.

### **40. INDEMNIFICATION**

- A. To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the City, its agents, officers, officials and employees from and against all tortuous claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of, or alleged to have resulted from the acts, errors, mistakes, omissions, work, and/or

services of the Contractor, its agents, employees or any tier of Contractor's subcontractors in the performance of this Contract. Contractor's duty to defend, hold harmless and indemnify the City, its agents, officers, officials and employees shall arise in connection with any tortuous claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property including loss of use resulting there from, caused by Contractor's acts, errors, mistakes, omissions, work or services in the performance of this Contract including any employee of the Contractor, any tier of Contractor's subcontractor or any other person for whose acts, errors, mistakes, omissions, work or services the Contractor may be legally liable. The Contractor shall, with respect to all work which is covered by or incidental to this Contract, indemnify and hold the City, Engineering Dept., all officers, employees, attorneys, agents of the City and the City Engineer, harmless from and against all of the following made by any person or entity not a party to this Agreement:

1. Any claim, liability, loss, damage, costs, expenses, including reasonable attorneys' fees, expert witness fees, court costs and other expenses of litigation, awards, fines, or judgments, arising by reason of the death or bodily injury to persons, injury to property, design defects (if design originated by Contractor only) or other loss, damage or expense, including any of the same resulting from any alleged or actual negligent or intentional acts or omissions of the Contractor, the Subcontractors, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether it is caused in part by a party indemnified by this Contract and regardless of whether said acts or omissions of such party are active or passive.
  2. Any claim, liability, loss, damage, costs, expenses, including reasonable attorneys' fees, expert witness fees, court costs and other expenses of litigation, awards, fines, or judgments, arising out of any dispute regarding the Contract or any work performed under the Contract.
  3. Any claim, liability, loss, damage, costs, expenses, including reasonable attorneys' fees, expert witness fees, court costs and other expenses of litigation, awards, fines, or judgments, arising out of any dispute regarding the Contract or any work performed under the Contract by any Subcontractor.
  4. Any loss or damage that may happen to the work or any part thereof, and any loss or damage to any of the materials or other property used or employed in performing the work, including any loss or damage during transit or storage of any property or materials, including any property or materials furnished by the City, including reasonable attorneys' fees, awards, fines, or judgments.
- B. However, the Contractor shall not be obligated under this Contract to indemnify the City with respect to the sole negligence or willful misconduct of the City or its agents or employees or Design Engineer.
- C. The indemnity obligations of this Contract shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which**

**otherwise exists by statute or under the common law of the State of Arizona, except those in conflict with the express terms of these General Conditions. The law of comparative negligence, as adopted by the State of Arizona, shall be binding upon the relationship between the parties, except as set forth herein.**

- D. The amount and type of insurance coverage requirements set forth herein will in no way be construed as limiting the scope of the indemnity in this paragraph.

#### **41. ACCIDENT PREVENTION - EMERGENCY - AUTHORITY TO ACT**

**After the Contract Notice to Proceed has been issued through final acceptance of the Contractor's work, it shall be the Contractor's responsibility for protection and safety of the public and workers twenty-four (24) hours a day, seven (7) days a week. This responsibility will also be placed on the Contractor after final acceptance when the Contractor is on site performing any Guaranty/Warranty work.**

Whenever, in the opinion of the Engineer, the Contractor has not taken sufficient precaution for the safety of the public or the protection of the work to be constructed under this Contract, or of adjacent structures or properly, and whenever, in the opinion of the Engineer, an emergency has arisen and immediate action is considered necessary, then the City, with or without notice may provide suitable protection by causing work to be done and materials to be furnished and placed. The cost of such work and materials shall be borne by the Contractor, and if the same is not paid on presentation of the bills, such costs will be deducted from any amounts due or to become due to the Contractor. The performance of such emergency work shall not relieve the Contractor of responsibility for any damage that may occur.

#### **42. PROTECTION OF WORK**

The Contractor, at no additional expense to City, shall at all times safely guard and protect his own Work; provide, erect, and maintain suitable barriers around all improvements, work areas, excavations, or obstructions to prevent accidents; and provide, place, and maintain during the night sufficient lights, signals, and signs for this purpose on or near the Work. The Contractor shall at all times, until its completion and final acceptance, protect his Work apparatus, equipment, and material from accidental or any other damage; and make good any damages thus occurring at no additional cost to the City.

#### **43. PROTECTION OF PROPERTY**

- A. The Contractor, at no additional expense to the City, shall at all times (1) safely guard the City's property and abutting or adjacent property from injury, loss, or damage in connection with the Contract; (2) protect by false work, braces, shoring, or other effective means all buildings, foundations, walls, fences, property pins and other property along his line of Work, or affected directly by his Work, including, but not limited to the City's property, against damage; (3) cover or otherwise protect stockpiles of materials to avoid damage to any property from such materials; and/or (4) repair,



replace, or make good any such damage, loss or injury, unless such is caused directly by the City or his duly authorized representatives.

- B. The Contractor shall exercise care to protect from injury all water lines, sanitary sewer lines, gas mains, telephone cables, electric cables, services pipes, and other utilities or fixtures which may be encountered during the progress of the Work. All utilities and other service facilities or fixtures if damaged, shall be repaired by the Contractor without additional compensation.
- C. The Contractor shall personally check and verify utility information on the plans. Where existing utilities or structures are shown on the plans or drawings, they are believed to be accurate but are not guaranteed to be such or that these are the only utilities or structures in the construction area. Protection is completely the responsibility of the Contractor and he must satisfy himself as to the existence and location of all utilities and structures.
- D. The Contractor shall give written notice of at least forty-eight (48) hours before breaking ground, to all persons, superintendents, inspectors, or those otherwise in charge of property, streets, water, gas, or sewer pipes, telephone or electrical cables, railroads, or otherwise who may be affected by the Contractor's operation in order that they may remove any obstruction for which they are responsible and have a representative on the site to see that their property is properly protected.

#### **44. PROTECTION OF PERSONS**

A. The Contractor shall:

- 1. At all times protect the lives and health of his employees under the Contract.
  - 2. Take all necessary precautions for the safety of all persons on or in the vicinity of the Work site.
  - 3. Comply with all applicable provisions of Federal, State, and Municipal safety laws and building codes.
  - 4. Comply with all pertinent provisions of the "Manual of Accident Prevention on Construction" issued by the Associated General Contractors of America, Inc., latest edition, to prevent accidents or injury to persons, on, or adjacent to the premises where the Work is being performed. The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of persons and shall post danger signs warning against the hazards created by such features of construction as protruding nails, rod hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, and falling materials; and he shall designate a responsible member of his organization on the Work site whose duty shall be the prevention of accidents.
- B. The Contractor shall comply with all provisions of the "Occupational Safety and Health Act" (OSHA), including any amendments thereto and rules and regulations issued pursuant thereto, applicable to the Work and performance of the Contract. Whereas state in which Work is performed has passed legislation bearing on Occupational Safety

and Health, such legislation and amendments thereto, together with rules and regulations issued pursuant thereto shall be complied with by the Contractor.

#### **45. POTENTIALLY DANGEROUS WORK**

- A. When the use of explosives, driving, or removal of piles, wrecking, excavation Work or other similarly potentially dangerous Work is necessary for the prosecution of the Work, the Contractor shall exercise the utmost care so as not to endanger life or property. The Contractor shall be fully responsible for any and all damages, claims, and for the defense of any actions against the City resulting from the prosecution of such Work in connection with or arising out of the Contract.
- B. The Contractor shall notify each private and public utility company or other owner of property having structures or improvements in proximity to the site of the Work, of his intent to perform potentially dangerous Work. Such notice shall be given sufficiently in advance to enable the companies or the owners of property to take such steps as they may deem necessary to relieve the Contractor of responsibility for all damages, claims, or the defense of any actions against the City resulting from the performance of such Work in connection with or arising out of the Contract.
- C. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "EXPLOSIVES-KEEP OUT", and shall be in the care of competent watchmen at all times. Blasting Permits must be obtained from the Sedona-Oak Creek Fire District, 2860 Southwest Drive, Sedona, AZ 86336 (602) 282-6800.
- D. If blasting is required, building inspection reports must be conducted for properties in accordance with the agency having jurisdiction, but no less than 500-feet from the proposed blasting area. For affected structures that are to remain after the construction, the report shall consider and document the existing structural and architectural condition of those structures. The intent of this report is to document the condition of such structures before construction, obtain agreement with the property owner, and use for comparison purposes after construction is completed, to ensure the structure was not damaged from construction activities. Blasting will only be considered if rock excavating equipment equal to or better than that provided by "drum-cutters" (see [www.drumcutters.com](http://www.drumcutters.com)), would not be effective for excavation.

#### **46. PATENTS, COPYRIGHTS, AND ROYALTIES**

- A. The Contractor shall assume all costs arising from the use of any patented article, material, device, equipment or process used or furnished by him in connection with, or incorporated in the Project. The Contractor shall save, and hold harmless the City and all officers and agents thereof from all damages, costs and expenses in law or equity (including attorneys' fees, expert witness fees, court costs, and other expenses of litigation) that may come at any time, arise or be set up by reason of any infringement or alleged infringement of any patent rights as a consequence of the installation or use of any such article, material, device, equipment or process in or about the Project. The

Performance Bond required by Arizona Revised Statutes Section 34-221 shall be deemed to apply expressly to this provision of the Contract.

- B. Should the Contractor, his agent, employer or any of them be enjoined from furnishing or using any invention, article, material or plans supplied or required to be supplied or used under this Contract, the Contractor shall promptly pay such royalties and secure the requisite licenses; or, subject to acceptance by the City, substitute other articles, materials or appliances in lieu thereof which are of equal efficiency, quality, finish, suitability and market value to those planned or required under the Contract. Descriptive information of these substitutions shall be submitted to the Engineer for determination of general conformance to the Design concept and the Construction Contract. Should the City elect to refuse a substitution, the Contractor agrees to pay such royalties and secure such valid licenses as may be requisite for the City, his representatives, agents and employees or any of them, to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law or in equity on account thereof.

#### **47. CHANGE ORDERS FOR CHANGED OR EXTRA WORK**

- A. The City reserves the right at any time during the progress of the Work to make necessary alterations of, deviations from, additions to, or deletions from the Contract, or may require the performance of extra Work neither covered by the specifications nor included in the Proposal, but forming a part of the Work contracted for; provided however, the Contractor shall not proceed with any such change or extra Work without a written Change Order approved by the City. Until a resolution is reached by the City and the Contractor, the Contractor is to continue work on the project. Additional time may or may not be added to the projected (and approved) contract end date. Such changes or extra Work shall in no way injuriously affect or invalidate the Contract or the Contractor's bond, but the difference in cost shall be added to or deducted from the amount of the Contract, as the case may be. Adjustments, if any, in the amounts to be paid to the Contractor by reason of any such change or extra work shall be determined by one of the following methods in the order as listed:
  - 1. Method A Unit prices contained in the Contract Documents for the same type or class of work.
  - 2. Method B By an acceptable unit price proposal from the Contractor.
  - 3. Method C By an acceptable lump sum price proposal from the Contractor.
  - 4. Method D If neither Method "B" or "C" can be agreed upon before the change or extra work is started, then the Contractor shall be paid the "actual field cost" of the work plus eighteen percent (18%) or twelve percent (12%) as stated herein below.
- B. Whenever any change or extra work is to be done, for which unit prices for the same type or class of work are contained in the Contract Documents, such work shall be done and shall be measured and paid for pursuant to Method A herein above set forth and the other applicable portions of the Contract Documents, subject to Article 30 of the General Conditions. Full compensation for taxes, overhead and other costs shall be considered as included in the unit prices bid.

- C. Methods B and C shall include an itemized cost breakdown including overhead and profit. In determining the amount payable to the Contractor, an additional five percent (5%) may be added to the amount payable to a Subcontractor, but no "pyramiding" or additional percentage shall be authorized for any work done by a Subcontractor. This percentage may be increased to seven percent (7%) if the Contractor provides proof that it is paying transaction taxes for the subcontractor. The subcontractor percentage shall be considered as compensation for taxes paid on the subcontracted work, and any other costs or profit associated the subcontracted work. The taxes shall not be separately shown as a cost in the amount to which the seven percent (7%) is applied. Full compensation for taxes, overhead and other costs shall be considered as included in the unit price or lump sum price accepted whether such items are explicitly itemized or not.
- D. When any change or extra work is performed under "Method D", the term "actual field cost" of such change or extra work is hereby defined to be and shall include:
1. The actual wages paid to all the Contractor's workmen such as foremen, equipment operators, mechanics, and laborers, for the time actually performing the change or extra work. Superintendents are considered as compensated for in the overhead.
  2. All of the Contractor's materials and supplies incorporated in the change or extra work, unless the total cost for a particular material or supply is less than twenty dollars (\$20). Materials and supplies with a total cost of less than twenty dollars (\$20) will be considered as compensated for in the overhead and profit allowance.
  3. All machinery and equipment for the time actually employed or used in the performance of the changed or extra work shall be based on the submitted and approved schedule of equipment rates, unless the hourly cost for the machinery or equipment is less than twenty-five dollars (\$25.00) per hour or one hundred fifty dollars (\$150) per day. Items with rates less than twenty-five dollars (\$25.00) per hour or one hundred fifty (\$150) per day will be considered as compensated for in the overhead and profit allowance. The contractor shall submit machinery and equipment rates for approval prior to Start of Construction.
  4. Any transportation charges necessarily incurred in connection with any equipment authorized by the City for use on said change or extra work, but which is not already on site provided the transportation cost exceeds twenty-five dollars (\$25.00).
  5. All power, fuel, lubricants, water, and similar operating expenses as well as other expendable materials.
  6. Incidental expenses incurred as a direct result of such change or extra work, including payroll taxes and a pro rata portion of premium in the Performance Bond and Labor and Materials Payment Bond, and where the premiums therefore are based on payroll costs, on Public Liability and Property Damage insurance, Workmen's Compensation insurance, and Occupational Disease Disability insurance, Builder's Risk, and other insurance required by the Contract. **In order to be allowed these amounts shall be provided in writing when submitting the first request for a progress payment. These amounts payable by the City shall not change for the duration of the contract. The twelve percent (12%) mark-up shall not apply to these items.**

7. No repairs, replacements, or other forms of overhead expense shall be included in "actual field costs".
  8. The Engineer may adjust the amount due under this method based upon a reasonable estimate of the actual cost of performing deleted work in the case of a change in work method or work material. In this case the amount due shall be the difference between the estimated cost to perform work per the original method based on conditions known at the time of the change to the extent such conditions are not the basis for a change, and the method proposed to be used plus the unit bid price for the original method.
- E. The Engineer may direct the form in which the accounts of the actual field costs shall be kept and may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment, if required, which shall be used in the performance of any change or extra work under method "D". In the event that machinery and heavy construction equipment are required for such change or extra work, the authorization and basis of payment for the use thereof shall be stipulated in the written Change Order.
- F. The twelve percent (12%) or eighteen percent (18%) of the "actual field cost" to be paid to the Contractor shall cover and be full compensation for the Contractor's profits, overhead, superintendence, and field and home office expense, and all other elements of cost not embraced within the "actual field cost" as defined herein. Eighteen percent (18%) shall be payable for Contractor costs for that portion of total change orders less than or equal to thirty thousand dollars (\$30,000). For that portion exceeding thirty thousand dollars (\$30,000) the twelve percent (12%) factor shall be applied to Contractor costs. In determining the amount payable to the Contractor, an additional percentage per C above may be added to the amount payable to a Subcontractor, but no "Pyramiding" or additional percentage shall be authorized for any work done by Subcontractors.
- G. No claim for any change or extra work of any kind shall be allowed unless the work is ordered and approved in writing by the City in the form of a Change Order.
- H. No anticipated profits shall be allowed for work deleted.
- I. If the City has work accomplished by other sources due the Contractor's failure to perform required work it may deduct an additional five hundred dollars (\$500) or five percent (5%) of the cost of accomplishing the work, whichever is greater, in addition to the cost of accomplishing the work using other sources. The City shall consider this additional amount as compensation for overhead and administration.
- J. The Contractor shall furnish satisfactory bills, payrolls, and vouchers covering all items of cost and when requested by the City, give the City access to accounts relating thereto.
- K. Any Change or extra work shall be considered a part of the Contract, subject to all of its terms, conditions, stipulations, review, guaranties, and tests may be performed

without notice to the surety on the Contractor's bond. The Contractor and surety hereby agree to these provisions.

- L. The following language shall apply to all change orders:

“THIS CHANGE ORDER CONSTITUTES FULL, FINAL, AND COMPLETE COMPENSATION TO THE CONTRACTOR FOR ALL COSTS, EXPENSES, OVERHEAD, PROFIT, AND ANY DAMAGES OF EVERY KIND THAT THE CONTRACTOR MAY INCUR IN CONNECTION WITH THE WORK DESCRIBED IN THIS CHANGE ORDER, INCLUDING ANY IMPACT ON THE DESCRIBED WORK OR ON ANY OTHER WORK UNDER THE CONTRACT, ANY CHANGES IN THE SEQUENCES OF ANY WORK, ANY DELAY TO ANY WORK, ANY DISRUPTION OF ANY WORK, ANY RESCHEDULING OF ANY WORK, AND ANY OTHER EFFECT ON ANY OF THE WORK UNDER THIS CONTRACT. BY THE EXECUTION OF THIS CHANGE ORDER, THE CONTRACTOR ACCEPTS THE CONTRACT PRICE CHANGE AND THE CONTRACT COMPLETION DATE CHANGE, IF ANY, AND EXPRESSLY WAIVES ANY CLAIMS FOR ANY ADDITIONAL COMPENSATION, DAMAGES OR TIME EXTENSIONS, IN CONNECTION WITH THE DESCRIBED WORK.”

- M. The Contractor shall not be entitled to adjustments in contract price or contract time related to submittal of any cost estimates.

#### **48. PROCEDURE FOR REQUESTING CHANGE ORDERS –EXTRA**

- A. In case any instructions, either oral or written, appear to the Contractor to involve a change or extra work for which, in his opinion, he should receive extra compensation, he shall make a written request to the Engineer for a written Change Order authorizing such change or extra work. Should a difference of opinion arise as to what does or does not constitute a change or extra work, or concerning the payment thereof, and the City insists on conformance, the Contractor shall proceed with the work after presenting written notice of claim for extra cost to the City and shall keep an accurate account of the "actual field cost" thereof as provided for in Method "D" under "Changed or Extra Work". The Contractor shall thereby not waive any right he might have to compensation for the claimed "extra cost" in connection with a change or extra work. The matter shall be submitted to the City for final determination as to whether or not a change or extra work was involved, and if so, the amount due to the Contractor.
- B. Any claims for extra cost pursuant to this section, together with supporting documents and receipts, must be filed within ten (10) consecutive calendar days after performing the work for which extra cost is claimed. The City shall have the right to reject any claim for extra cost if the foregoing procedure is not followed.
- C. In giving instructions, the Engineer shall have the authority to make minor changes that do not involve extra cost or time of performance and are not inconsistent with the design concept and purposes of the contracted work; but otherwise, except in an emergency endangering life or property, no change or extra work shall be performed unless authorized by a written "Change Order" approved by the City Council or its

designee in accordance with the City Code, and no claim for extra cost shall be valid unless so approved, except as otherwise provided herein.

#### **49. PROCEDURE FOR REQUESTING CHANGE ORDERS--EXTRA TIME**

- A. The Contract time may be changed only by a change order either alone or in conjunction with other changes. Any claim for an extension of Contract time shall be based on written notice delivered to the Engineer within seven days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence unless Engineer allows an additional period of time to ascertain more accurate data. Notice of the extent of the claim must state the cause of the delay, the date of occurrence causing the delay, and the amount of additional time requested. Requests for extensions of time shall be supported by all evidence reasonably available or known to the Contractor, which would support the extension of time requested. If the Contractor is requesting an extension of time because of weather, he shall supply daily written reports to the Engineer describing such weather and the work which could not be performed that day because of such weather or conditions resulting there from and which he otherwise would have performed. The Engineer's acceptance of the daily reports shall not be deemed an admission of the Contractor's right to receive an extension of time or waiver of the City's right to strictly enforce the time provisions contained in the Contract Documents. Requests for extensions of time failing to include the information specified in this Article and requests for extension of time which are not received within the time specified above shall result in the forfeiture of the Contractor's right to receive any extension of time requested. Any change in the Contract time resulting from any such claim shall be incorporated in a change order. The percentages specified in Section 38 and 47 G above shall be considered to include full compensation for each day or portion thereof of extra time.
- B. The Contract time will be extended in an amount equal to time loss due to delays beyond the control of Contractor if a claim is made there for as provided in paragraph A. Such delays shall include, but not be limited to, acts or neglect by City or others performing additional work, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or act of God. No extension of the Contract time will be granted where the delay is attributable to a Subcontractor, manufacturer, fabricator, supplier or distributor or any other party performing services or furnishing material or equipment on behalf of the Contractor unless such party's delay is attributable to one of the above enumerated causes. Time limits concerning substantial completion and final completion as stated in the Contract Documents are of the essence.
- C. An extension of time may be granted by the City after the expiration of the time originally fixed in the Agreement or as previously extended, and the extension so granted shall be deemed to commence and be effective from the date of such expiration. However, such extension shall not be deemed to be a release of any of the City's rights under the Contract Document unless expressly stated as such.

## **50. DIFFERING SITE CONDITIONS**

If conditions or objects are encountered at the site which are (1) sub-surface or otherwise concealed and which differ materially and substantially from those indicated or anticipated in the Contract Documents or (2) are of an unusual nature, which differ materially and substantially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice, in writing, by the Contractor shall be given to the City promptly before conditions are disturbed and in no event later than 24 hours after first observance of the conditions. The City shall promptly investigate such conditions and, if they differ materially and substantially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the work, shall provide an equitable adjustment in the Contract Amount or Contract Period, or both as per Sections 47 through 49 of these General Conditions. If the City determines that the conditions at the site are not materially and substantially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the City shall so notify the Contractor in writing, stating the reasons. No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment has been made under this agreement. Weather, and the effects of weather on surroundings, surface, or subsurface are to be anticipated and do not constitute a differing condition. No contract change, which results in a benefit to the Contractor, shall be allowed unless the contractor has provided the required written notice. No contract adjustment will be allowed under this section for any effects caused on unchanged work.

## **51. WARRANTY PERIOD**

- A. Besides guarantees required elsewhere, the Contractor shall and hereby does guarantee all work for a period of two (2) years after the date of final acceptance of the work by the City and shall repair and replace any and all work together with any other work, which may be displaced in so doing, that may prove defective in workmanship or materials within the two-year period from the date of final acceptance, without expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted. If the Contractor is required to repair or replace any portion of the Project pursuant to the two-year guarantee provided by this section, the repair or replacement shall similarly be guaranteed for an additional one-year period from the date of completion of the repair. In the event of failure to comply with the above-mentioned conditions, within a week (seven consecutive days) after being notified in writing by the City, the City is hereby authorized to proceed to have the defects repaired and made good at the expense of the Contractor, who hereby agrees to pay the cost and charges therefore immediately upon demand by the City. In case of emergency, where, in the opinion of the City, delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the expenses in connection therewith shall be charged to the Contractor.
- B. The Contractor guarantees to the City that all materials and equipment furnished under this Contract will be new and of good and sufficient quality, free from faults and defects as is necessary to complete the project as required by the plans and specifications.



- C. The City and the Contractor agree that the guarantee on the equipment possessed and used by the City, in accordance with Article 34 of these General Conditions, shall commence on the date that the City takes possession of the equipment and so notifies the Contractor in writing. City and Contractor further agree that such taking possession and use shall not be deemed as acceptance of any part of the work. Take-over of equipment may occur when such equipment can be put into routine service on a permanent basis at City's discretion.

## **52. AUTHORITY OF ENGINEER**

- A. The Engineer shall furnish engineering services during construction of the work to the extent provided in the Contract Documents. He shall observe and review the work in the process of construction or erection. Compliance with the Contract Documents shall be the Contractor's responsibility notwithstanding such observation or review. The Engineer has authority to recommend suspension of the work when it appears such suspension may be necessary to accomplish the proper implementation of the intent of the Contract Documents. The authority to observe, review, or recommend suspension of all or any portion of the work, or exercise such other authority as may be granted by the Contract Documents, shall not be construed or interpreted to mean supervision of construction, which is the Contractor's responsibility, nor make the Engineer responsible for providing a safe place for the performance of work by the Contractor or by the Contractor's employees or those of suppliers or subcontractors or for access, visits, use, work, travel, or occupancy by any other person. The provisions of MAG Sections 104.1.4 and 104.2.5 as contained in the 2012 edition apply to this contract.
- B. The Engineer shall have authority to reject any or all work, materials, or equipment, which do not conform to the Contract Documents, and to decide technical questions, which arise in the execution of the work. The Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work, materials, equipment, and supplies which are to be paid for under the Contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Engineer's estimates and decisions shall be final and conclusive, except as otherwise expressly provided. In case any question shall arise between the parties to the Contract relative to the Contract Documents, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under the Contract affected in any manner or to any extent by such question.

## **53. DECISIONS OF THE CITY**

If the Contractor is not in agreement with any final decision of the Engineer, then he may appeal, in writing, such decisions to the City Manager, who shall within a reasonable time after presentation, make decisions in writing on claims properly made by the Contractor. The appeal shall contain the final decision of the Engineer as an attachment, or in the absence of such final decision a copy of a certified letter sent to the Engineer, at least fifteen (15) working days prior to the appeal, requesting such a final decision in writing. The decision of the City Manager shall be regarded as final.

#### **54. TEMPORARY SUSPENSION OF THE WORK**

- A. The City Manager may, upon the recommendation of the Engineer, or by the Manager's own determination, suspend the work.
- B. Should the discovery of a potential archaeological or historic resource occur during construction, the Contractor shall cease work at that site, immediately notify the Engineer, and shall not proceed until instructed to do so by the City. In the event such a suspension of the work occurs, the provisions of Article 49 shall apply to extend the time for final completion of the work.

#### **55. AUTHORITY AND DUTIES OF CITY'S FIELD REPRESENTATIVE**

- A. Inspectors may be placed on the work to keep the City informed as to the progress of the work and the manner in which it is being done; to keep records; act as liaison between the Contractor and the City; and to call the attention of the Contractor to any deviations from the Contract Documents. However, failure of the inspector to call the attention of the Contractor to faulty work or deviations from the Contract Documents shall not constitute acceptance of said work.
- B. The inspector cannot control how the material is used; therefore, the responsibility for its safety and proper use shall be the Contractor's. Until the job is finally completed, the Contractor may do work that changes or modifies work previously done, and even though at any given time, a piece of work might be well done and acceptable in quality, the responsibility for keeping it in that condition until the work is complete is the sole responsibility of the Contractor. For this reason, it is impossible to accept, finally, any portion of a project until the project as a whole is accepted and control of said project is transferred from the Contractor by final official written acceptance by the City.
- C. Any personal assistance which an inspector may give the Contractor will not be construed as the basis of any assumption of responsibility in any manner, financial or otherwise, by the inspector or the City.**
- D. The inspector is not and does not purport to be a Safety Engineer and is not engaged in that capacity by the City and shall have neither authority nor the responsibility to enforce construction safety laws, rules, regulations, procedures, or the safety of persons on and about the construction site.
- E. The presence or absence of an inspector on any job will be at the sole discretion of the City, and such presence, or absence of an inspector will not relieve the Contractor of his responsibility to obtain the construction results specified in the Contract Documents.
- F. The inspector is not authorized to approve or accept any portion of the work or to issue instructions contrary to the Contract Documents. Approvals, acceptance or instructions, when given, must be in writing and signed by the City. The inspector shall have

authority to reject defective materials; however the failure of the inspector to reject defective material or any other work involving deviations from the Contract Documents shall not constitute acceptance of such work.

- G. Nothing in this subsection shall in any way be so construed as to require or to place responsibility for the method, manner or supervision of the performance of the work under this Contract upon the inspector, or the City. Such responsibility rests solely with the Contractor.

## **56. CHARACTER OF WORKERS, METHODS, AND EQUIPMENT**

- A. The Contractor shall at all times employ sufficient skilled labor in accordance with Federal, State and local labor laws; and the proper equipment for completing the project in the manner and time required by the Contract. All equipment, which is proposed to be used on the project, shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be used such that it will not damage property adjacent to the work area.
- B. Any person employed by the Contractor or any Subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed from the work by the Contractor or Subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the Engineer. Should the Contractor or Subcontractor fail to remove such person as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may suspend the work by written notice until such orders by the Engineer are followed by the Contractor. The Contractor or Subcontractor shall hold the City harmless from damages or claims for compensation that may occur in the enforcement of this section.
- C. The City may require submittal of Certified Payrolls at any time from the Contractor showing the employee names, addresses, Social Security Numbers, rates of pay, payments received, payroll deductions, occupational classification(s), and hours per day worked in such classification(s) for work performed on this project by employees. The contractor shall retain such records for the minimum time required by law or three (3) years after project completion, whichever is longer. The Contractor shall also be responsible to produce upon request from the City such payroll records from its subcontractors.

## **57. WARRANTY OF COMPLIANCE WITH STATE AND FEDERAL LAW**

CONTRACTOR understands and acknowledges the applicability to it of the Americans with Disabilities Act, the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act of 1989. 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."

- A. Under the provisions of A.R.S. § 41-4401, CONTRACTOR hereby warrants to CITY that CONTRACTOR and each of its 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").
- B. A breach of the Contractor Immigration Warranty shall constitute a material breach of this contract and shall subject CONTRACTOR to penalties up to and including termination of this contract at the sole discretion of CITY.
- C. CITY retains the legal right to inspect the papers of any contractor or subcontractor employee who works on this contract to ensure that the contractor or subcontractor is complying with the Contractor Immigration Warranty. CONTRACTOR agrees to assist CITY in regard to any such inspections.
- D. CITY may, at its sole discretion, conduct random verification of the employment records of CONTRACTOR and any subcontractors to ensure compliance with Contractor's Immigration Warranty. CONTRACTOR agrees to assist CITY in regard to any random verification performed.
- E. Neither CONTRACTOR nor any subcontractor shall be deemed to have materially breached the Contractor Immigration Warranty if CONTRACTOR or any 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.
- F. The provisions of this article must be included in any contract that 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.

## **58. QUALITY CONTROL AND TESTING**

- A. The Contractor will support the Testing Company when contracted by the City for Quality Control and testing for specification compliance and assurance.
- B. During the progress, the work shall be subject to the review and observation of the City. The Contractor shall afford every reasonable facility and assistance to the City to make such review. If any work is covered up without approval or consent of the City, it will be uncovered for examination at the Contractor's expense.
- C. The fact that the City is on the job site shall not be taken as an acceptance of the Contractor's work or any part of it. The Contractor shall notify the City upon completion of his Contract, and the work shall be given final construction review by

the City, and any tests and re-tests shall be witnessed by the City or his representative. If all parts of the work are acceptable and substantially comply with the intent of the Contract Documents, initial acceptance shall be made by the City. If parts of the work are not acceptable and require additional work or rework by the Contractor to complete the Project, such costs shall be borne by the Contractor.

- D. Contractor shall submit to the City, ten (10) days in advance of construction and without charge, samples or specifications of materials he proposes to use and shall not use these materials until he has received approval from the City.
- E. Contractor shall furnish tests and reports on tests of all materials, equipment and installations called for in the Contract Documents. The testing laboratory must be approved by the City and the Contractor shall pay the cost of the tests, and necessary re-tests, including all transportation charges unless otherwise provided by the Contract Documents.
- F. Required certificates of inspection, testing, or compliance shall be secured by the Contractor and promptly delivered by him to the Engineer. Certificates shall be provided within five (5) working days after the test is conducted. Each report shall indicate compliance with the specifications.
- G. The City reserves the right to perform additional inspections and testing deemed appropriate with their own forces or with outside consultants or testing agencies. Should such inspection or testing reveal work that is not in compliance with Contract Documents, such costs of inspection or testing, and any required rework shall be borne by the Contractor.
- H. Following is a summary of minimum frequency of testing the city shall require. If there are conflicts in the frequency of testing between this Section and the Technical Specifications, the stricter of the two will govern. This list is a partial list of major items of work, if an item is a part of the project and not listed the Contractor shall provide testing for that item. The Contractor shall provide the appropriate tests for the activities a part of the project. The City reserves the right to request a greater frequency for the testing.

The following frequencies are based on a maximum of 8" lifts. When the lifts are greater than 8", the frequency of testing shall increase proportionately with the increased depth of lift.

Activity	Frequency
Roadway Fills	1 each 300 ft per lift
AB Subgrade	1 each 300 ft per lift
AC Pavement	1 each 300 ft per lift
Trench Backfill	1 each 300 ft per lift
Concrete Curb & Gutter	4 cylinders per 50 cy concrete
Concrete Sidewalk	4 cylinders per 50 cy concrete

## **59. TERMINATION OF CONTRACT**

- A. The City may, at any time, terminate the Contract at the City's convenience and without cause. Such termination shall be effective upon receipt by Contractor of written notice from the City of such termination for the City's convenience. Contractor shall cease operations as directed by the City in the notice of termination and take actions necessary, or that the City may direct, for the protection and preservation of the work. In the event of a termination for convenience, the Contractor shall be paid only the direct value of its completed work and materials supplied as of the date of termination, and Contractor shall not be entitled to anticipated profit or anticipated overhead or any other claim of damages from the City. Further, in the event a termination of the Contractor for cause is determined to have been without legal right, then the termination shall be deemed to have been a termination for convenience.
- B. If the Contractor refuses or fails to prosecute the work or any separable part thereof with such diligence as will ensure its completion within the time specified herein, or any extension thereof granted in the manner specified herein, or fails to complete the work within such time, or if the Contractor fails to comply with any written order of the Engineer or the City or fails to timely pay Subcontractors, material, men, or laborers, or if the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he or any of his Subcontractors should violate any of the provisions of the Contract, then the City may serve written notice upon the Contractor and his surety of its intention to terminate the Contract and, unless within ten (10) days after the service of such notice such violations of the Contract cease and satisfactory arrangements for the corrections thereof are made, the Contract shall without further notice, upon the expiration of said ten (10) days or such extensions thereof as may be expressly granted by the City in writing, cease and terminate.
- C. In the event of any such termination, the Contract shall be deemed terminated and not rescinded. Following such termination of the Contract, the City will take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and finish the Project by whatever method the City may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished, or completion is permanently suspended by the City. If the unpaid balance of the Contract price exceeds the direct and indirect costs of completion of the project, including compensation for additional professional service, including but not limited to fees charged by the City's attorney, such excess shall be paid to the Contractor. If such costs or liquidated or actual damages as provided by this Contract exceed such unpaid balance, the Contractor shall pay the difference to the City. Such additional costs and any liquidated or actual damages due to the City under this Contract will be determined by the City Manager and be submitted to the City Council in the form of a Change Order to the Contract.
- D. Any extensions of time granted by Change Order or other extensions granted by the Council do not constitute a waiver of the City's right to terminate the Contract pursuant to this section for the Contractor's failure to complete the Project within the time

specified in the Contract and any authorized extensions thereto, nor do such extensions constitute a waiver of the City's right to collect liquidated damages.

- E. If the work is stopped by order of a court, public authority, or the City for a period of ninety (90) calendar days or more, through no act or fault of the Contractor, anyone employed by such Contractor or his Subcontractors, then the Contractor may terminate the Contract in accordance with these Contract Documents.

## **60. TIME IS OF THE ESSENCE**

It is mutually understood and agreed by and between the parties to the Contract that in the execution of the same, time is an essential element of the Contract, and it is important that the work progress vigorously to completion.

## **61. LIQUIDATED DAMAGES**

For each and every calendar day that work shall remain uncompleted after the time specified for the completion of the work in the Contract, or as adjusted by a change order, the sum per calendar day, as stipulated in the Advertisement for Bids, shall be deducted from any money due or to become due to the Contractor, not as forfeit or penalty, but as liquidated damages. This sum is fixed and agreed upon between the parties because the actual loss to the City and to the public caused by delay in completion will be impractical and extremely difficult to ascertain and determine. It is agreed that the City has made a good faith attempt to estimate the loss caused by any delays and that the estimate is incorporated in the sum, which is agreed to be reasonable. If the City allows the Contractor to complete or attempt to complete the work subsequent to the date of completion specified herein, such action shall not constitute a waiver by the City of the imposition of the liquidated damages provision as specified herein.

## **62. CITY'S REMEDIES CUMULATIVE AND NONWAIVER**

No right or remedy conferred upon or reserved to the City by the Contract shall be considered exclusive of any other remedy or contractual right, but the same shall be distinct, separate, and cumulative, and shall be in addition to every other remedy existing at law or in equity or by statute; and every remedy given by the Contract to the City may be exercised from time to time as often as the occasion may arise, or as may be deemed expedient. No delay or omission on the part of the City to exercise any right or remedy arising from any default on the part of the Contractor shall impair such right or remedy or shall be construed to be a waiver of any such default or an acquiescence thereto, or otherwise affect the right of the City to enforce the same in the event of any subsequent breach or default by the Contractor.

## **63. SEVERABILITY CLAUSE, DISPUTE RESOLUTION, APPLICABLE LAW**

- A. This Contract shall be governed by the laws of the State of Arizona, and venue for any litigation arising out of this Contract shall be in the Superior Court of the State of Arizona in and for the County of Coconino or the County of Yavapai, depending upon

the location of the work, if the amount in dispute is in excess of \$5,000.00. If the amount in dispute is less than \$5,000.00, jurisdiction and venue shall lie in the nearest Justice of the Peace Court of the appropriate county. Arbitration shall not be an alternative method of settling disputes unless separately agreed upon in writing by the parties. This Contract shall not be construed to create any contractual relationship of any kind between the Engineering Dept., and the Contractor or any Subcontractor, or between the City and any Subcontractor. During any dispute arising hereunder, the Contractor shall continue to perform all work in accordance with the Contract Documents. In the event of any dispute arising hereunder, the prevailing party in the resolution of such dispute shall be entitled to recover its attorney's fees and costs incurred.

- B. The provisions of this Contract shall be deemed to be severable, and if any term, phrase or portion of the Contract shall be determined to be unlawful or otherwise unenforceable, the remainder of the Contract shall remain in full force and effect.
- C. Any and all disputes relating to this Contract shall be subject to the provisions of Chapter 3.10 of the Sedona City Code. The City Code can be viewed on the City of Sedona website, as well as, the City Clerk's Office, City Hall, Sedona, Arizona.
- D. Notwithstanding the mediation provisions set forth in Paragraph 62.C above, either party may submit, by demand letter, correspondence or notice, to the other party, any claim, counterclaim, dispute or other matter in question between the Contractor and the City arising out of or relating to this Contract, the Contract Documents, the Plans, the Project or the work, or breach thereof, and such claim, counter claim, dispute or other matter in question shall be subject to and decided by arbitration in accordance with the Rules for Non-Administered Arbitration of Business Disputes (the "Rules") of the Center for Public Resources ("CPR") currently in effect, except as provided herein and except where modified by the provisions hereof.
- E. Any arbitration arising out of this Contract, the Contract Documents, the Plans, the Project or the work, or any breach thereof may include, by consolidation or joinder, or in any other manner, at the discretion of either the Contractor or the City, any other entities or persons whom the Contractor or the City, as the case may be, believes to be substantially involved in a common question of law or fact.
- F. All demands for arbitration and all responses thereto that include any monetary claim, must contain a statement that the total sum or value in controversy as alleged by the party making such demand or response is not more than \$150,000.00 (exclusive of interest and arbitration fees and costs). The arbitrators will not have jurisdiction, power or authority to consider or make findings except the denial of their own jurisdiction concerning any controversy where the amount at issue is more than \$150,000.00 (exclusive of interest and arbitration fees and costs) or to render a monetary award in response thereto against any party which totals more than \$150,000.00 (exclusive of interest and arbitration fees and costs). Notwithstanding the foregoing provisions, the parties may mutually agree to waive the jurisdictional limitations set forth in this sub-



paragraph. In the event of such mutual waiver, all other provisions in this sub-paragraph shall apply.

- G. Demand for arbitration shall be filed with the other party in accordance with Rules. A demand for arbitration shall be made within a reasonable time after the claim, dispute, or other matter in question has arisen. In no event shall the demand for arbitration be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question could be barred by the applicable statute of limitations.
- H. In the event the amount in controversy is less than \$50,000.00 a sole arbitrator shall be appointed in accordance with Rules. In the event the amount in controversy is \$50,000.00, the demanding party shall appoint one party-appointed arbitrator in its notice demand for arbitration. The responding party may within ten (10) days, appoint a second party-appointed arbitrator. The party-arbitrators shall appoint a third arbitrator in accordance with the Rules. If the party-arbitrators fail to appoint a third arbitrator, the third arbitrator shall be appointed in accordance with the Rules. If the responding party fails to appoint a second party-appointed arbitrator within the time so provided, selection of the second arbitrator shall be in accordance with the Rules.
- I. The decision of the arbitrators shall be in accordance with laws of the State of Arizona and the United States. The arbitrators shall prepare written findings of fact and conclusions of law upon which the decision and award shall be based. The arbitrators may award compensatory damages and attorneys' fees and costs to the prevailing party. The arbitrators shall have no authority to award consequential damages or punitive damages, and the parties hereby waive any claim to those damages to the fullest extent allowable by law.
- J. The demanding party shall select the locale of arbitration, but shall not choose a location greater than twenty-five (25) miles from the Project site.
- K. This agreement to arbitrate shall be specifically enforceable by either party under the prevailing laws of the State of Arizona and the United States. Any award rendered by the arbitrators shall be final and enforceable by any party to the arbitration, and judgment shall be made upon it in accordance with the applicable laws of any court having jurisdiction thereof. The arbitrators' decision shall be final and conclusive as to the facts. Either party may appeal manifest errors of law to a court of competent jurisdiction within fifteen (15) days of the award.
- L. Unless otherwise agreed in writing, and notwithstanding any other rights or obligations of either of the parties under the Contract, the Contractor and the City shall carry on with the performance of their respective duties, obligations and services hereunder during the pendency of any claim, dispute or other matter in question giving rise to arbitration or mediation, as the case may be. The City shall be under no obligation to make payments to the Contractor on or against such claims, disputes or other matters in question giving rise to arbitration or mediation, during the pendency of such

arbitration or mediation or other proceedings to resolve such claims, disputes or other matters in question.

#### **64. POTHOLING REQUIREMENTS**

The Contractor shall pothole all existing utilities 1,000 feet ahead of trenching activities to allow adequate time and distance to allow for the adjustment of grade or location of the construction activities. The contractor shall pothole at least two (2) working days ahead of installing facilities such as manholes, sidewalks, storm drainage inlets, footing, headwalls, and similar non-longitudinal installations. The Contractor shall backfill the pothole after verifying the depth, size and location of the utility. If a potential conflict is encountered, temporarily plating the potholed utility will be allowed for review and coordination of a resolution of the conflict with the City and affected utilities representatives.

The City requests a minimum of five (5) working days notification of a potential conflict for marked utilities. This requirement does not relieve the Contractor of the responsibility to make the City aware of conflicts timely of the Contractor's awareness. If potholing 1,000 feet in advance of trenching activities has not been kept up and a conflict creates down time or delays in work no extension of time or compensation for down time will be considered for that conflict.

#### **65. UNMARKED UTILITY REPAIR**

If in the course of work, a conflicting utility line that was not shown on the plans is discovered, the Contracting Agency will either negotiate with the owner of the Utility for relocation, change the alignment and grade of the trench or roadbed, provide encasement or sleeving, relocate the utility, or as a last resort, declare the conflict as "extra work" to be accomplished by the Contractor in accordance with Section 47 of these General Specifications. In the case of unmarked or incorrectly marked utilities the Contractor shall consider that responsibilities are per Arizona State Statutes Section 40 –360.

The Contractor shall contact the City and utility affected immediately upon damaging or breaking an unmarked utility. If an unmarked utility is found the Contractor shall take every precaution to not damage the utility and work around the conflict with the City and Utility representatives. No interpretation of this provision that changes the responsibility for non-located and improperly located utilities per Arizona State Statutes Section 40 –360 shall be valid.

#### **66. UTILITY SEPARATION**

The Contractor shall maintain as a minimum one (1) foot of vertical clearance and three (3) feet of horizontal clearance for all utility crossings. Water/sewer minimum separations will be two (2) feet vertical clear and six (6) feet horizontal clear. If less than one (1) foot but more than six (6) inches clearance is all that can be accommodated concrete encasement shall be provided.

## **67. NOTIFICATION TO RESIDENTS & COMMUNITY RELATIONS**

The Contractor shall inform the residents along the construction area of the proposed work. This notification and community relations shall include, but not necessarily be limited to:

### **A. Mailings**

The Contractor shall prepare a letter for mailing to the residents located adjacent to the project. This mailing will include a description of work to be done, work hours, date's for begin and end construction, Contractor representative contact name and phone number. The cost for the mailings shall be incidental to the project.

### **B. Informational Signage**

The Contractor shall provide and install advance information signs and project information signs before beginning construction to inform the public of the forthcoming project, construction dates, and suggested alternate routes. Sign layout shall be as approved by the Engineer. Signs shall not be constructed or installed prior to approval by the Engineer for the designs, sizes and locations. The Contractor shall maintain the signs as necessary and update the information as requested by the Engineer. The information signs shall be shown on the traffic control plan. The cost for this work shall be included in the unit bid price for Mobilization.

### **C. Meetings**

The Contractor may be requested to attend and participate in a pre-construction public meeting if deemed necessary by the Engineer. Meeting time, location and agenda will be determined by the Engineer. The cost for this meeting if held shall be incidental to the project.

### **D. Driveway impact notification**

The Contractor shall notify any resident or business of any access restrictions at least 48 hours prior to access restriction. Notification to residents is considered incidental to the projects activities and included in the unit price of the various activities.

# PROJECT TECHNICAL SPECIFICATIONS

**FINAL TECHNICAL SPECIFICATIONS**

FOR

CITY OF SEDONA PROJECT

SR179 PEDESTRIAN CROSSING AT OAK CREEK

**NEW PEDESTRIAN CROSSING**



**wsp**



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## 1 GENERAL TECHNICAL REQUIREMENTS

The project includes median improvements along SR 179 and adjacent to the existing SR 179 Oak Creek bridge crossing to incorporate improvements for a new grade-separated pedestrian pathway crossing. The proposed work consists of new sidewalk, curb and gutter, retaining walls, pedestrian handrail, pedestrian safety rail, and removal and replacement of a portion of the existing Tlaquepaque property wall. The project also includes striping, path signing, irrigation and landscaping. The project documents include additional information for a bid alternatives for a waterwheel feature.

In the event a conflict exists on the Plans or between the Plans and referenced specifications or these Construction Special Provisions, the order of precedence shall be as follows:

1. Addenda
2. The Project Special Provisions
3. City of Sedona Construction Contract General Conditions
4. The Project Plans
5. City of Sedona Infrastructure Design Guidelines and Details
6. MAG Uniform Standard Details for Public Works Construction, 2015 Edition, 2019 Revisions
7. Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition
8. Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest revisions
9. Arizona Department of Transportation Materials Testing Manual, latest revisions
10. Arizona Water Company Construction Specifications and Details

The following items are non-payment items being considered incidental to the project, the costs of which are to be included in project overhead or within a specific bid item.

### 1.1 Additional Reference Standards

- The “MAG Specifications” is more particularly defined as the Maricopa Association of Governments (MAG), Uniform Standard Specifications and Details for Public Works Construction, 2020 Edition with 2021 revisions.
- Latest revisions and amendments to City of Sedona, City Code, Chapter 15.05 (Building) and Chapter 13.50 (Storm Water Discharge)
- Arizona Department of Transportation, Standard Specifications for Road and Bridge Construction, 2021.
- Arizona Department of Transportation, Highways Division, Traffic Signals & Lighting Standard Drawings, with updates up to and including August 2019.
- Arizona Department of Transportation, Signing and Marking Standard Drawings, with updates up to and including February 2021.
- Arizona Department of Transportation, Structures Standard Drawings, 2020.
- Arizona Department of Transportation, Roadway Engineering Construction Standard Drawings, May 2017.

- U.S. Department of Transportation, Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition with latest revisions and Arizona Supplement to MUTCD, January 2012 or latest edition.
- Latest revisions of ASTM, AWWA, ANSI, or Federal specifications, standards and details
- In the event of a conflict between the Construction Drawings and the Contract language, the Contract language shall prevail.
- In the event of a conflict between the ASTM, AWWA, ANSI, or Federal specifications, standards and details and the MAG Uniform Standard Specifications and Details for Public Works Construction or the City Construction Specifications, the City Construction Specifications shall prevail.
- In the event of a conflict between the AWWA, ANSI, or Federal specifications, standards and details and the Contract language, the Contract language shall prevail.
- All other City of Sedona Department policies and procedures where applicable.

## **1.2 Project Videotape**

The Contractor, in the presence of the City's inspector, shall make a video (DVD format, indexed) of the entire project area prior to commencing any construction activities. The Contractor and City's Inspector will review the video for completeness immediately after recording, and any areas that are not clearly covered and defined, shall be re-recorded. The Contractor shall turn over a copy of the video to the City's Inspector at completion of the recording.

## **1.3 Soil and Subsurface Conditions**

The following is added to MAG Specification Section 102.4, Examination of Plans, Special Provisions and Site of Work: A report titled Pedestrian Crossing at Oak Creek Geotechnical Evaluation Report, by WSP USA dated August 29, 2022, is hereby referenced and made part of this document. The report is available at the City of Sedona Engineering Services office. The Contractor may use this report and shall make his own determinations as to the soil and subsurface conditions, including rock, clay, and ground water, and shall complete the work in whatever material and under whatever conditions may be encountered or created, without extra cost to the City.

## **1.4 Other Agency/Utility Company Notifications/Protection of Existing Facilities**

The Contractor shall conduct his operations as set forth in Section 105.6 of the MAG Standard Specifications. The Contractor is responsible for protecting all existing facilities during construction at no additional cost to the City. This may include but is not limited to coordinating, potholing and monitoring as directed by the individual utility companies. The locations of existing underground utilities have been shown on the plans to the best of the Design Engineer's knowledge; however, it shall be the Contractor's responsibility to field verify all utility locations and to coordinate in a timely manner with the pertinent utility companies so that any obstructing utility installation may be adjusted without delay to the Contractor's project schedule. The Contractor shall be responsible for potholing all utility conflicts in a timely manner.:

### **1.4.1 Contacts:**

The following utilities have facilities in the vicinity of the project limits:

Utility Owner	Contact	Phone
APS-Prescott	Matthew Herrera	928-646-8502
Arizona Water Co-Sedona	Casey Goff	928-282-7092
ADOT	Joe Reed	928-527-0189
ADOT	Bob Garza	602-371-7989

CenturyLink	Armen McNerlin	928-634-2102
City of Sedona	Bob Welch	928-203-5120
NPG Cable, LLC Sedona, DBA Suddenlink Comm.	Sanford Yazzie	928-266-0672
UniSource Energy Services	Taylor Mathe	928-203-1214

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#### 1.4.2 Coordination:

Coordination with the pertinent utility companies has been a part of the development of this project. Construction activities shall be coordinated and scheduled to incorporate the following applicable utility construction activities.

- The contractor shall call “BLUE STAKE” (1-800-STAKE-IT) and notify the appropriate private, public and municipal utility companies 48 hours prior to any construction work to verify location and depth of all utility lines in the area of work. Utilities if indicated on plans are approximate locations only, taken from the utility company maps. If the contractor encounters any lines not indicated on the drawings or marked in the field by the utility company that may interfere with his work, he shall notify the appropriate utility company immediately for disposition of those facilities.
- Water, sewer, gas, electric, cable, and telephone will need to be protected in place during construction. The contractor to coordinate with the City Project Manager and the utility companies.
- Light poles, fire hydrant, irrigation lines, water valves, electric vaults and water quality box relocations and removals as indicated on the plans.

#### 1.4.3 Site Access:

The contractor shall ensure that all existing sidewalks on this project remain open and safely usable at all times. Such measures as backfilling, ramping to existing sidewalks or providing alternate sidewalk access adjacent to existing sidewalks may be used. In high pedestrian use areas, the Engineer may request temporary hard-surface walkways, such as plywood sheets to be installed at no additional cost to the City.

The Contractor shall maintain Fire Department Access at all times to project site and adjacent property homes and businesses.

The Contractor shall maintain driveway access and striped parking stalls for businesses adjacent to the project site at all times during construction.

### 1.5 Inter-Agency Agreement (IGA)

No IGA is required for this project.

### 1.6 Submittals

#### 1.6.1 General

All submittals shall conform to the requirements of MAG Standard Specifications Section 105.2, except as modified by Section 25 of the Contract's General Conditions and as noted herein.

#### 1.6.2 Format, Distribution and Review

Shop drawing submittals shall be on no larger than 24"x36" or 11"x17" sheets as needed. All drawings shall indicate the name of the job, the City's job number, date, names of the Contractor and subcontractor, and the date of approval by the Contractor. All other technical data, catalog cut sheets, material/fabrication certificates or material mix design reports shall be presented in a 3-hole, bound, 8 ½" x 11" format. Faxed

documents are not acceptable. Each submittal package must have a separate transmittal document, cover sheet and index. The Contractor must also create and update a standardized, itemized submittal tracking log spreadsheet and attach with each submittal or re- submittal.

The Contractor shall first review all submitted data for compliance with the specifications and job requirements prior to any submittal. Clearly indicate what specific item, type, model, class, color, size, etc. is to be used and note any Contractor comments or recommendations on the submitted data. One (1) pdf format Contractor approved copy along with a letter of transmittal and the tracking log sheet shall be delivered to the City or its authorized representative.

The Contractor shall anticipate and schedule for a review period of ten (10) business days by the City and/or its designee during which time the submittal(s) will either be accepted, accepted with comments, rejected, asked to be revised, or additional information may be requested. One (1) reviewed copy, stamped/noted accepted or otherwise, will be returned by e-mail to the Contractor by the City or its authorized representative. The latter three directions will require a re-submittal and subsequent additional ten-day review period. Re-submittals shall be made within seven (7) business days. The process will be repeated until all required, submitted materials have been approved. Approved shop drawings and other material submittals shall become a portion of the Contract Documents as they are returned to the Contractor.

#### 1.6.3 Materials/Product Data

The following materials/product data shall be submitted for review and approval:

- Project Sign
- Resident Notification Letter
- Pipe fittings, prefabricated tees and connections, paint, pvc pipe and perforated pipe, epoxy adhesive, structural anchorage systems
- Geotextile (filter fabric)
- Valves, valve boxes, debris caps, valve key extensions, fire hydrants, tapping sleeves, air/vacuum valve assemblies, corporation/curb stops and service saddles, encasements, end seals and other appurtenances
- Valve vaults, manholes and other precast structures
- Drain Inlet
- Samples such as paint, stains, integral color, signing, marking, lighting, controllers, video detection equipment, and other materials/products
- Samples of the following materials with the applicable properties including (color, size, specific gravity, durability test results, mix design, and source of the materials to be used):
  - Decomposed Granite
  - ABC
  - Asphalt
  - 1/4" washed rock
  - Rip-Rap
  - Concrete pavers
- Equipment Rates
- City Notice of Intent (NOI)
- Storm Drain Access Barrier Material Certifications

Product data shall include information such as the manufacturer's printed recommendations, compliance with recognized trade association standards, application of testing agency labels and seals, product dimensioning, and notation of coordination requirements. Data shall also include the source location and quantity of materials that are or will be available for the project. The Contractor shall provide materials that have uniformity in color, size, and appearance.

#### 1.6.4 Certificates

The following certificates shall be submitted for review and approval:

- Piping materials
- Reinforcing Steel

Certificates shall be prepared by the manufacturer or testing agency thereof and should include technical specifications and compliance with industry trade association and testing agency standards.

#### 1.6.5 Mix Designs

The following mix designs shall be submitted for review and approval:

- Asphalt Concrete (AC) Pavement
- Portland Cement Concrete
- Aggregate Base Course (ABC) material

Controlled Low Strength Material (CLSM) - The mix designs shall directly compare the proposed mix components and properties with those of the referenced standard mix or as modified within the designated specifications.

#### 1.6.6 Shop Drawings

The following shop drawings or documents shall be submitted for review and approval:

- Traffic control plans-haul routes, staging areas, contractor's office location
- Utility protection plans
- Construction schedules
- 24-hour emergency contacts (names and phone numbers)
- Special fabrications/hardware (Including light poles and drilled shaft foundations)
- Shoring/trench box protection details (sealed by an Arizona registered professional structural engineer)
- Utility testing and disinfection documentation
- Geotechnical/material testing results
- Reinforcement shop drawings
- Concrete mix designs
- Aggregate Base Course Material
- Decomposed Granite/Landscape Materials
- Striping and Signage
- Erosion Control Materials
- Quality Control and Material Testing Plan
- Safety Plan
- Temporary Shoring and Bracing
- Temporary Soil Stabilization
- Pedestrian channelization fencing, handrail and safety railing
- All proposed changes/modifications (the required details and certification as stipulated by the engineer)
- As-built plan drawings

All dimensions and identification of products and materials included, along with notation of any coordination requirements and established field dimensions/measurements shall be clearly shown or noted. As-built plans will be provided to the City Engineer.

#### 1.6.7 Poured in Place Concrete

The consistency of the concrete shall be determined and regulated on the basis of the slump test as described by ASTM C-143. Slump tests shall be provided by the Contractor throughout the progress of the

project. Concrete shall be of the class and strength indicated on the Contract Plan Drawings or as otherwise directed by these Specifications.

For additional information see City of Sedona General Conditions Section 58.

All exposed concrete shall be Davis colors: Yosemite Brown, Cocoa or Rustic Brown as approved by the City. The color additive ratio shall be as per Manufacturers recommendation for selected color. Variations in the additive to accomplish the selected color shall be subject to City Engineer approval. Contractor to supply 3 - 4'x4' mockup concrete panels with each color additive on site for review and selection of final color by the Engineer.

#### **1.6.8 Warranties**

Furnish written warranties and reports on the findings of all tests that are specifically required by the Specifications. Delivery of such warranties and test results shall not relieve the Contractor from any obligation assumed under any other provisions of the Contract.

### **1.7 Permits**

The City of Sedona Engineering Right-of-Way Permit fee will be waived for this project. All required permits will be the Contractor's responsibility to obtain and pay for including but not limited to; ADEQ Dust Control permit and Arizona Water Company fire hydrant meter fees, if applicable. The cost for all permits shall be included in the Contractor's schedule of values.

As a part of the project design and development an Encroachment Permit has been initiated with ADOT Northcentral District and a draft addendum has been provided as a part of the Bid Package. The Contractor shall comply with all requirements outlined in the ADOT Encroachment Permit and provide supplemental documentation or other as prescribed by ADOT to complete the application and obtain approval.

### **1.8 Quality Control and Testing**

Quality Control and Testing shall be completed per Section 58 of the General Conditions and as supplemented in this section. For quality control purposes, the Contractor shall provide and pay for all geotechnical services including material sampling and testing. This work shall be paid as a lump sum item. Samples shall be taken under the direction of the City or its authorized representative. Testing shall be performed by an independent testing laboratory, pre-approved by the City or its authorized representative, under the supervision of a professional civil or geotechnical engineer registered in the State of Arizona. Written test reports shall be sent directly to the City or its authorized representative within five (5) business days after the tests are conducted. Each report shall indicate the location at which the test was made, the date of the test, type and source of material tested, test designation being used and the name of the person who performed the test. The Contractor shall pay for any retesting as a result of a failed test.

#### **1.8.1 Poured In Place Concrete**

The consistency of the concrete shall be determined and regulated on the basis of the slump test as described by ASTM C-143. Slump tests shall be provided by the Contractor throughout the progress of the project. Concrete shall be of the class and strength indicated on the Contract Plan Drawings or as otherwise directed by these Specifications.

Not less than four (4) cylinder specimens shall be made by the Contractor for each 50 cubic yards of each class of concrete with a minimum of four (4) specimens for each class placed or not less than 4 specimens for each half-day of placement. Specimens shall be tested in accordance with ASTM C-42. Two (2) cylinders shall be tested at fourteen (14) days. If the tested strength meets or exceeds the minimum 14-day requirements, the City may accept the concrete. The City or its authorized representative may have the other two cylinders tested at 28 days or discard at 60 days. Retesting as a result of failure shall be done at the Contractor's expense.



#### 1.8.2 Aggregate Base Materials Compaction Tests

One (1) compaction test will be required on the compacted base material every 500 feet of pavement cut or fraction thereof. Areas of less than 500 feet in length will require a minimum of two (2) tests. The City or its authorized representative will choose the location and depth of in-place density tests. If any test made should fail, the area must be reworked and two (2) additional tests shall be taken at the Contractor's expense. The compacted base material shall be compacted to one hundred (100%) percent of maximum density for the full depth when tested in accordance with MAG Specifications Section 301.3 and 310.2. Aggregate base material shall not be placed on subgrade until final compaction tests of the subgrade have confirmed that the subgrade meets the compaction requirements of these Specifications.

#### 1.8.3 Asphalt Concrete Pavement Testing

- One (1) Marshall test, gradation test and oil content test per day, or per 1,000 tons of asphalt placed, whichever is more frequent
- One (1) nuclear density gauge test every 300 lineal feet per lane per mix
- Asphalt pavement cores shall be taken in accordance with MAG Standard Specification Section 321.6. If the test cores indicate deficiencies, additional cores shall be required per MAG. Any associated additional testing costs shall be the contractor's responsibility.

### 1.9 Construction Survey and Layout

The Contractor shall be required to employ and retain at the Work Site, a surveyor with the experience and capability of performing all survey, control and layout tasks required of the Contractor to properly construct the Work. The surveyor must be an independent land surveyor registered in the State of Arizona, subcontracted to the Contractor and be acceptable to the City. The surveyor shall verify the elevations and grades shown on the plans and inform the City Engineer or his Representative of any discrepancies with the plans. Field adjustments may be necessary with prior approval of the City Engineer or his Representative.

#### 1.9.1 General

- From established primary control points, Contractor shall furnish all required lines, measurements, grades and elevations for construction of all facilities, structures, pipelines, street construction and all other site improvements.
- Contractor shall establish a base line for the project based upon the control information provided in the Contract Documents and establish a minimum of three benchmarks suitable to the work.
- Contractor shall develop and make all detailed surveys, measurements and staking needed for construction including all temporary benchmarks, control points, work lines, stationing, grade / slope elevations, pipe / structure inverts, batter boards, off-sets, and cut sheets.
- Contractor shall keep current, accurate, organized and legible as-built notes and measurements of the constructed work. Surveyor shall maintain a complete and accurate log of all control and survey work as it progresses. All survey data, field notes and computations shall be recorded and kept in industry standard hard bound field books, all in accordance with recognized established professional surveying standards.
- Contractor shall be held responsible for the preservation of all benchmarks, points, marks, and stakes made or established for the work. Contractor shall reestablish and replace the same, at no additional cost to the City, any construction surveying / staking that has been accidentally, carelessly or willfully destroyed by any party.

#### 1.9.2 Survey Staking Guidelines and Tolerances

- Alignment Staking – Every 50 ft on tangent and every 25 ft on curves.
- Slope Staking – Every 50 ft on tangent and every 25 ft on curves; re-stake every 10 ft in elevation.
- Easement Staking – Every 50 ft on tangent and every 25 ft on curves; wooden lath with flagging at 100 ft maximum spacing.

- Structures – Line stationing and at least two corners for location with two sets of off-sets plus centerline of inlets/outlets; elevations of bottom or floor and inlet/outlet inverts as necessary.
- Pipelines – Line stationing at appropriate offset dimensions with invert elevations for all pipe, fittings, horizontal and vertical bends, manholes, valves, fire hydrants and all appurtenances.
- Flat Concrete Pavement – Cut or fill elevations to top concrete two ft offsets; each corner and centerline of road.
- Roadway – Blue tops every 50 ft on tangent and every 25 ft on curves for subgrade, subbase and edge of pavement.
- Pavement Replacement – Where trench work requires pavement replacement the excavation, backfill, compaction and pavement shall follow MAG Detail 200, “T” Top construction. The contractor shall provide blue tops, where necessary, to establish subgrade and finished grades prior to paving operations.
- Asphalt Pavement – Provide a thorough check of the proposed pavement elevations and adjacent existing improvements verifying acceptable drainage flow following existing drainage patterns, prior to placement of new asphalt.
- Record Staking – Provide permanent stake at stub-outs, services and end-of-lines.
- Horizontal accuracy of easement staking shall be plus or minus 0.1 ft. Accuracy of all other staking shall be plus or minus 0.04 ft horizontally and plus or minus 0.02 ft vertically.
- Survey calculations shall include an error analysis sufficient to demonstrate the required accuracy.

#### **1.10 As-built Record Drawings**

As-built record drawings shall be completed as described in Sections 15, 26, 31, and 32 of the General Conditions and as described below.

- All excavation is to remain open and no backfill shall take place until all underground fittings including but not limited to tees, valves, horizontal bends, vertical bends, stub-outs, and any other required facilities have been as-built. Contractor must make items accessible in which the Contractor's Surveyor can as-built survey and properly document the elevation and location of all items listed above. Any item which is backfilled without being as-built shall be re-excavated at the Contractor's expense to allow the Surveyor to as-built.
- The Contractor shall maintain a full size set of blue/black line drawings on- site and continuously update these drawings to reflect any and all field adjustments, changes, additions, deletions etc. as they occur during the course of construction. Changes to the original Plan Drawings shall be made by striking through the original information with a single line. The as-built changes shall be noted with the letters 'AB' after the correction. The as-built changes shall be shown in both plan and profile as appropriate. Changes in horizontal alignment shall be noted on the plan and tied down by stationing and offsets from the monument line. Any portions of the Work not constructed shall be clearly labeled “Deleted” and marked with an “X” through the deleted work.
- The City or its authorized representative will check the Contractor's as-built drawings set for accuracy and completeness on a monthly basis. The Contractor shall certify with each monthly pay request that the as-built drawings are current.
- At project completion, the Contractor shall submit a final, clean, full size set of blue/black line record plan drawings showing the entire project with the as-built information as described above. This final set shall be prepared, reviewed and sealed by the Contractor's surveyor. The City shall review the final paper set for completeness and acceptability. If rejected, the Contractor shall correct or complete the as-built drawings and resubmit for an additional review.
- After City review and approval of the final paper set as-built record drawings, the City shall give the Contractor's surveyor the project's permanent, original design set of plan drawings on which the surveyor shall cleanly and professionally mark-up to prepare the “official” sealed set of certified project record drawings and then return these as-built record drawings to the City. This submittal will be required to obtain final acceptance and final payment for the project.

- The Contractor shall submit to the City a copy of the As-Built plans in the following formats: AutoCAD 2013 format (or earlier version), PDF format, 24"x36" hard copy.
- The Contractor shall prepare a copy of the As-Built submittal in accordance with standards required by the ADOT Encroachment Permit.

### **1.11 Safety Fence Requirement for Trenches and Excavations**

Work in and around trenches and excavations shall comply with Section 16 of the General Conditions and the following:

The Contractor shall provide safety construction fencing around all open trenches and excavations during all non-working hours. In addition, the Contractor shall provide safety fencing around the project site during working hours in order to ensure public safety.

The Contractor shall provide for the safety and welfare of the general public by adequately fencing all excavations and trenches that are permitted by the Engineer to remain open when construction is not in progress.

Fencing shall be securely anchored to approved steel posts located six (6) feet on center, having a minimum height of six (6) feet, and shall consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

The fencing, when installed about the periphery of excavations and trenches, shall form an effective barrier against intrusion by the general public into areas of construction. The contractor, at all times when construction is not in progress, shall be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, shall take immediate action to rectify any deficiency. Prior to the start of any excavation or trenching required for the execution of the proposed work, the contractor shall submit to the Engineer for approval, detailed plans showing types of materials and methods of fabrication for the protective fencing.

There will be no separate measurement or payment for furnishing, installing, or maintaining protective fencing. The cost shall be considered incidental to the cost of other items

### **1.12 Environmental Mitigation Measures**

1. Contractor shall implement Best Management Practices during construction to prevent the introduction and spread of noxious and invasive species, such as cleaning construction equipment and vehicles prior to arriving on site at commencement of construction, and again prior to leaving the site at completion of construction.
2. Revegetation will occur following construction and will follow the ADOT Roadside Vegetation Management Guidelines: <https://azdot.gov/sites/default/files/2019/06/Vegetation-Management-Guidelines.pdf>
3. Contractor shall implement Best Management Practices during construction and vegetation clearing activities to prevent potential impacts to Yellow-billed cuckoos. During the breeding season (April 15 and September 1), the Contractor will not have any equipment or construction noise prior to 8:30 am to minimize disturbance to YBCUs, if present. Should a YBCU be detected during construction, contractor shall cease construction or other activities in that particular area until the cuckoo leaves of its own volition.
4. Contractor shall comply with the Migratory Bird Treaty Act requirements. If vegetation clearing will occur during the migratory bird breeding season (March 1- August 31), the contractor shall hire a qualified biologist to conduct a pre-construction nesting bird survey within 2 weeks prior to commencing with clearing. Contractor shall avoid any active bird nests. During the non-breeding season (September 1- February 28) vegetation removal is not subject to this restriction.

5. The contractor shall not cause injury or death to swallows, including eggs and nestlings. If work will occur that will directly impact nesting swallows from February 1 to August 31 of any calendar year, the contractor shall adhere to the following:
  - The contractor shall completely remove all existing swallow nests within 100 feet of work areas after August 31 but prior to February 1 to prevent swallows from reusing those nests.
  - The contractor shall implement exclusionary measures to prevent swallows from building new nests within areas directly impacted by construction activities. Exclusionary measures shall be implemented in all areas where swallows are likely to nest, and may include (a) continually removing nesting materials during early nest construction when eggs or nestlings are not present, (b) installing exclusionary netting (wire or plastic mesh 0.75 inch or less in diameter), (c) installing deterrent spike strips, and/or (d) installing polytetrafluoroethylene (Teflon) sheeting
  - The contractor shall not disturb any active swallow nests (completed or partially completed nests that contain eggs or nestlings). If any active nest is discovered within 100 feet of construction activities, work shall stop and the Arizona Department of Transportation Environmental Planning biologist shall be contacted (602.622.9622 or 602.712.6819) to evaluate the potential for disturbance of nests.
  - The contractor shall monitor and maintain the effectiveness of exclusionary measures daily. Netting shall be maintained such that it remains in place without any loose areas or openings that could trap and/or entangle birds. Spike strips shall be maintained such that they remain in place. Teflon sheeting shall be reapplied as often as necessary to remain effective.
6. If swallow exclusion measures fail, the contractor shall:
  - Inform the Engineer as soon as swallow nest building occurs and determine whether the area can be avoided until nests are no longer active;
  - Hire a qualified biologist to survey bird nests within 100 feet of construction areas and provide a report to the Environmental Planning biologist (602.622.9622 or 602.712.6819) with the number of affected nests for each species of bird. The resume for the selected biologist shall be approved by the Engineer in coordination with the ADOT Biologist prior to conducting the survey.
  - Determine whether to wait for the nestlings to fledge or apply for a US Fish and Wildlife Service Migratory Bird Treaty Act Special Purpose permit from the USFWS Regional office in Albuquerque, New Mexico.
  - If the permit is approved, hire a wildlife rehabilitator licensed by USFWS to relocate and rehabilitate all affected eggs or nestlings.
  - Any costs incurred as a result of delays related to failure of swallow exclusion measures, including waiting until the nests are not active and/or time required to obtain a Migratory Bird Treaty Act relocation permit and the eggs or nestlings to be relocated from the work area shall be the contractor's responsibility.
  - The contractor shall remove all exclusionary measures after project completion to the satisfaction of the Engineer.
7. Construction within Oak Creek shall comply with the Clean Water Act Section 404 and 401 permitting processes and follow all 404 and 401 requirements.

## **2 MEASUREMENT AND PAYMENT**

### **2.1 General**

Measurement for each bid item shall be done in the units installed or percent complete as indicated in the Contract's Price Sheet. Measurement shall be for all work that is satisfactorily completed in place, with no allowance for waste, and that which is verified by field measurements.

In general, payments to the Contractor shall be in accordance with Section 31 of the Contract's General Conditions. Specific payment guidelines shall be in accordance with the MAG Specifications as applicable or as more particularly described below in Section 2.2, Items of Work, of these Technical Specifications. Payment will be made at the unit price or lump sum price that was bid and is shown on the Bid Schedule and shall constitute payment in full for furnishing all materials, equipment, appurtenances, labor, plant and tools necessary to provide a complete project in a workmanlike and satisfactory manner as shown by the Contract Drawings and described herein.

### **2.2 Items of Work**

The item numbers listed below correspond to the item numbers listed in the Bid Schedule.

#### **2.2.1 MOBILIZATION AND DEMOBILIZATION**

The City shall compensate the Contractor for a one-time mobilization of the contractor's personnel equipment, supplies and incidentals, establishment of offices, buildings and other facilities, required for the performance of the work on the project, as well as preparatory work and operations prior to the commencement of the work on the project site. Mobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization, measured as provided above, shall be made per Section 33 of the General Conditions.

The City shall compensate the Contractor for a one-time demobilization of the contractor's personnel equipment, supplies and incidentals, removal of offices, buildings and other facilities, required following performance of the work on the project. Demobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization, measured as provided above, shall be made per Section 33 of the General Conditions.

#### **2.2.2 MAINTENANCE AND PROTECTION OF TRAFFIC**

The Contractor shall submit a traffic control plan for acceptance by the City prior to proceeding with any work. The contractor shall submit any changes to the traffic control plan to the City for acceptance at least 72 hours prior to any traffic control changes. Lane restrictions on SR 179 shall be conducted Monday through Thursday, nighttime only. Lane restrictions will not be permitted during the daytime on weekends during the months of March and April.

A separate set of Construction Traffic Control Plans shall be provided by the Contractor and approved by the City a minimum of 3 business days prior to the start of any activity. This item shall also consist of providing traffic control devices, arrow-boards, at least two variable message boards, barricades, flagmen, and pilot cars if necessary consistent with the approved traffic control plans. This work shall be in conformance with Section 18, Paragraph D of the Contract's General Conditions.

Payment for Traffic Control will be on a lump sum basis with the payment amount being prorated (overall project percent completion) over the project's duration.

#### 2.2.3 STORM WATER POLLUTION PREVENTION PLAN

This work will be paid on a lump sum basis and consists of preparing and implementing a stormwater pollution prevention plan in accordance with the Sedona City Code, Chapter 14 and Section 16 of the General Conditions.

#### 2.2.4 REMOVE AND SALVAGE EXST PROPERTY WALL

The work under this item is for the removal of a portion of the existing south Tlaquepaque property wall in conflict with the proposed path for the limits as shown in the plans. Existing architectural elements shall be salvaged and reused. The existing property wall foundation shall be protected in place, unless it is determined that there is a conflict with proposed. If a conflict is discovered, the conflicting portion of existing foundation shall be sawcut and removed. A ½" bituminous joint filler shall be placed adjacent to any existing concrete and new pours.

The existing CCTV camera and arm mount shall be removed, salvaged and repositioned after wall reconstruction. Contractor shall coordinate with the City of Sedona for final positioning before installation. Contractor shall provide a fully function CCTV. Any required mounting hardware cost shall be incidental. Methods shall conform to MAG Section 350.

Measurement and payment for removing the existing south Tlaquepaque property wall shall be at the lump sum unit price and include all labor and materials required to remove the wall per the limits specified in the plans.

#### 2.2.5 REMOVE EXST SITE WALL

The work under this item is for the removal of the existing site wall at the location as shown in the plans.

Payment for removal of the site wall shall be at the unit price per linear foot as specified in the Bid Schedule and shall include all labor and materials required to remove the wall.

#### 2.2.6 REMOVE AND SALVAGE EXST POLE WITH WIND ART

The work under this item is for the removal and salvage of existing poles with art located near the existing Tlaquepaque arch area, including the pole foundations, as shown in the plans.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to remove and salvage the pole and art. The Contractor shall coordinate delivery of the salvaged poles and art with the City and Tlaquepaque.

#### 2.2.7 REMOVE AND SALVAGE EXST TLAQUEPAQUE ARCH SIGN

The work under this item is for the removal and salvage of the existing metal Tlaquepaque sign located on the existing masonry arch sign. The sign shall be replaced once new masonry arch has been constructed.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to remove and salvage the sign. The Contractor shall coordinate storage of the salvaged sign with the City and Tlaquepaque.

#### 2.2.8 REMOVE EXST ASPHALTIC CONCRETE PAVEMENT

The work under this item is for the sawcutting and removal of existing asphaltic concrete pavement, including base course if necessary.

Payment for sawcutting and removing asphaltic concrete pavement, including base course if necessary, shall be at the unit price per square yard specified in the Bid Schedule and shall include all labor and materials required to remove and dispose of the asphaltic concrete pavement, including base course if necessary, to a location off of the project site.

#### 2.2.9 REMOVE EXST CONCRETE SIDEWALK

The work under this item consists of the removal of the existing sidewalk as noted on the plans.

Measurement and payment for this item shall be by square foot of sidewalk removed. All equipment and materials required for removal shall be included in the unit price.

#### 2.2.10 REMOVE AND STOCKPILE EXISTING EROSION PROTECTION

The work under this item consists of the removal and stockpiling of existing erosion protection.

Measurement and payment for this item shall be by Lump Sum. All equipment and materials required for removal and stockpiling of any existing erosion protection shall be included in the unit price.

#### 2.2.11 REMOVE EXST GABIONS

The work under this item consists of the removal of gabion baskets and gabion mattresses including geotextile fabric, backfill, compaction and disposal. Methods shall conform to MAG Section 350. Contractor shall take means necessary during removal to allow for new gabion mattress to be connected to the existing mattress. Contractor shall take means necessary to re-tie and secure severed gabions at removal limits per the manufacturer's requirements.

Measurement and payment for removing mattress shall be at the unit price per cubic yard as specified in the Bid Schedule and shall include all labor and materials required to remove the gabion baskets and gabion mattresses.

#### 2.2.12 REMOVE AND RELOCATE EXST WATER QUALITY BOX

The work under this item consists of the removal and relocation of the existing water quality box, solar panel, rainfall gauge, and water sensors. The existing cabinet shall be mounted on the abutment wall in the location specified on the plans at the same approximate height as the current box location, with a bottom bracket with expanding anchor bolts and through the back of the cabinet with expanding anchor bolts. The velocity gauge and sample suction tubing shall be routed together in a single conduit. The junction boxes along the conduit from the new cabinet location to the existing pipe shall be 10' to 12' maximum. The existing solar panel for box power shall be relocated to be mounted in the abutment wall directly above the new cabinet location. New conduit shall be provided to the new cabinet location. The down time of the water quality meter due to relocation shall not exceed 14 days. The Contractor shall notify the City and ADOT at least 14 days prior to starting removal work on the existing water quality box or appurtenances.

Measurement and payment for relocation of the cabinet and appurtenances shall be at the unit price per each as specified in the Bid Schedule and shall include all labor and materials required to relocate the cabinet and appurtenances.

#### 2.2.13 RELOCATE EXST FIRE HYDRANT

The work under this item consists of removing and relocating the existing fire hydrant location shown in the plans. All work shall be coordinated with Arizona Water Company and work shall be conducted in accordance with Arizona Water Company requirements. The hydrant shall be delivered intact to the Arizona Water Company. Disassembly of the hydrant unit will not be allowed.

Payment shall be at the unit price per each as specified in the Bid Schedule and shall include all labor and materials including but not limited to trenching and back filling, pipe cutting and plugging, valve abandonment, and hydrant delivery required to remove the existing fire hydrant.

#### 2.2.14 RELOCATE EXISTING PROPERTY WALL LIGHTS

The work under this item consists of removing existing property wall lights and the associated mountings, storing and transporting to the new location and mounting in the new wall. This item shall also include demolishing, removing and disposing of existing hardware, wiring and conduit. New conduit, wiring and any new hardware or mountings required are incidental to this item. The Contractor shall coordinate relocation of the existing property wall lights with the City and Tlaquepaque.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to locate the property wall lights. The Contractor shall coordinate storage and relocation of lights with the City and Tlaquepaque.

#### 2.2.15 RELOCATE WATER METER

The work under this item will consist of removing and relocating the existing water meter, box and cover as shown on the plans. All work shall be coordinated with Arizona Water Company and work shall be conducted in accordance with Arizona Water Company requirements. This work also includes the installation of new service pipeline from the water main. Service lines shall be made of Type K copper with a minimum diameter of one inch from within the right-of-way to the meter. There shall be one meter per service line. Methods shall conform to MAG Section 631. Prior to installation of the meter, the contractor shall present it to the Arizona Water Company for inspection. If it is determined that a new meter is required, it will be provided by the City.

Measurement and payment for removing pipe and connection pieces for existing water service shall be at the unit price per each specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

#### 2.2.16 RELOCATE EXST LIGHT POLE

The work under this section shall consist of removing an existing light pole and its associated mast arm and luminaire, storing and transporting to the new location and mounting on a new foundation. The item shall also include demolishing, removing and disposing of existing foundations. The existing foundation shall be removed to a depth of at least 2 feet below the final grade, or as directed by the Engineer. All voids shall be filled and made level with the surrounding ground. Any disturbed ground shall be restored to match the surrounding area. The Contractor shall be responsible for replacement of any materials that are damaged through removal, handling, and transportation. The Contractor is advised to make note of, and take pictures of, any material that appears damaged before removal. The Inspector shall verify any claim of damaged existing material prior to removal. The luminaire and attached decorative stanchion shall be rotated back towards the path to avoid aerial breach into the SR 179 roadway.

Measurement and payment for relocating the existing light pole shall be at the unit price per each specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

#### 2.2.17 RELOCATE EXST CATV BOX

The work under this item will consist of relocating the existing CATV box as shown on the plans. The new box location and all work is to be approved and coordinated with Century Link.

Measurement and payment for relocating the CATV box shall be at the unit price per each as specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

#### 2.2.18 ADJUST VALVE BOX AND COVER TO GRADE PER MAG STD DTL 270

The work under this item will consist of adjusting frames, covers and valve boxes for public utility valves to finished grade as shown on the plans. Methods shall conform to MAG Section 345.

Measurement and payment for adjusting public utility frames, covers and valve boxes shall be at the unit price per each item specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

#### 2.2.19 REMOVE EXST DUMPED RIPRAP

The work under this item provides for removal and salvage of existing dumped riprap used for erosion protection, that is located in front of the west abutment of SR179 and as identified on the project plans. The work under this item shall consist of furnishing all labor, equipment and materials required to remove and salvage the existing dumped riprap, at the locations shown on the plans and in accordance with these Project Specifications.



The Contractor shall remove the designated dumped riprap, in a manner as to prevent any damage and the salvaged erosion protection, and carefully stockpile or store the rock within a secured area on the project site.

The item will be measured and paid for as Lump Sum, which shall be full compensation for all materials and work required to remove, salvage and store the existing dumped riprap, as shown on the project plans and as described in these Project Specifications.

#### 2.2.20 RELOCATE EXST TELCO PEDESTAL

The work under this item provides for relocation of the existing Telco Pedestal. The work under this item shall consist of the removal of the telco pedestal, the work associated with burying the slice, the placement of the marker and installation of the pedestal at a new location by connecting both with a 36" deep and 15 feet long trench, with two copper cables. The existing sidewalk shall be maintained at all times.

The item will be measured and paid for as Lump Sum, which shall be full compensation for all materials and work required to remove, salvage and store the existing pedestal, as shown on the project plans and as described in these Specifications.

#### 2.2.21 TREE PROTECTION SHORING

The work under this item is for the use of shoring as indicated on the plan sheets for excavation near the Sycamore trees. Tree protection excavation, backfilling and compaction methods shall conform to Section 601 of the MAG Standard Specifications.

The Contractor shall hire a Certified Arborist to assist in the development of a shoring plan to minimize disturbance to the existing Sycamore trees and ensure tree survival. The plan shall guide ground disturbing activity and the use of heavy machinery around tree root zones. The Certified Arborist shall provide oversight and monitor all ground disturbing activities within the tree root zones to ensure proper care is taken during excavation activity. All efforts shall be made to minimize disturbance to tree canopies and roots. All cuttings of roots that are larger than 1" diameter shall be approved by the Certified Arborist and be made as clean cuts with hand tools. Ripping of roots with large machinery shall not be allowed.

The Contractor shall provide trench bracing, sheathing or shoring necessary to perform and protect the excavation, as well as to minimize the disturbance to the Sycamore tree roots, as required for safety and conformance to governing laws. Shoring shall be located no more than two feet from the back of the required footing heel and as indicated in the plan sheets only. The Contractor shall not utilize shoring methods that including nailing or other penetration up-slope that may create disturbance to the Sycamore tree roots. The Contractor shall submit a working plan to the Engineer for review prior to construction.

Measurement and payment for this item shall be by Lump Sum. All equipment and materials required for the bracing, sheathing, or shoring, and the removal of the same, shall be included in the unit price.

#### 2.2.22 TEMPORARY FILL STABILIZATION

The work under this item is for the temporary fill stabilization adjacent to the existing SR 179 retaining walls. In order to avoid undermining the retaining wall footings, the existing fill shall be stabilized through methods of slurry or shotcrete, or as otherwise approved by the Engineer. Stabilization shall be in place for no longer than 90 days in order to perform reinforced concrete cantilever retaining wall and concrete short gravity wall construction.

Measurement and payment for this item shall be by Lump Sum complete in place.

#### 2.2.23 SUBGRADE PREP

This item is for all excavation, fill, grading, and compaction to prepare the subgrade and graded shoulders in accordance with MAG Sections 205 and 301.

This Section shall govern the following:

- Preparation of natural or excavated areas prior to the placement of sub-base material, pavement, curbs and gutters, driveways, sidewalks or other structures
- Preparation of the subgrade to the required line and grade for paved or unpaved shoulders, tapers, turnouts, and driveways, and at all other project locations where aggregate base and/or select material courses are used in accordance with the Project Plans.
- Structural excavation for removal of material for the construction of foundations for bridges, manholes, retaining walls, box culverts, head walls for culverts, and other structures, and other excavation designated on the plans or in these specifications as structure excavation
- Stripping and disposal of all unsuitable material including existing pavement and obstructions such as stumps, roots, rocks, etc., from the area to be paved
- Structure backfill consisting of furnishing material, if necessary, and placing and compacting backfill material around structures to the lines designated on the plans, or specified or directed by the Engineer
- Structure excavation and structure backfill including the furnishing of all materials and equipment and the providing of other facilities, which may be necessary to perform the excavations and place and compact the backfill, and the subsequent removal of these facilities, except where they are required or permitted by the plans, special provisions or Engineer to remain in place

#### Construction Requirements:

Preparation of Subgrade: In the areas where new construction is required, the moisture content shall be brought to that required for compaction by the addition of water, by the addition and blending of dry, suitable material or by the drying of existing material. The material shall then be compacted to the specified relative density. If pumping subgrade should become evident at any time prior to paving, the Engineer may require proof rolling with a pneumatic-tire roller or other approved equipment in order to identify the limits of the unacceptable area. The proof rolling will be performed at no additional cost to the City.

The Contractor may use removed existing asphalt concrete and other existing bituminous roadway surfacing materials originating on the project site, as embankment fill. All materials used shall be thoroughly crushed to sizes not exceeding four inches, or as approved by the Engineer. These asphalt/bituminous materials shall be placed not less than two feet below finished subgrade elevation.

All unsuitable material and all excess material shall be disposed of in accordance with the requirements of Sections 205.2 and 205.6, respectively. When additional material is required for fill, it shall conform to Section 210.

Relative Compaction: The subgrade shall be scarified and loosened to a depth of 6 inches. Rock 6-inches or greater in size that becomes exposed due to scarification shall be removed from the scarified subgrade. When fill material is required, a layer of approximately 3 inches may be spread and compacted with the subgrade material to provide a better bond. The subgrade cut and fill areas shall be constructed to achieve a uniform soil structure having the following minimum compaction, measured as a percentage of maximum dry density when tested in accordance with AASHTO T-99, Method A, and T191 or ASTM D6938 with the percent of density adjusted in accordance with the rock correction procedures for maximum density determination, ARIZ-227c1 to compensate for the rock content larger than that which will pass a No. 4 sieve. Unless otherwise noted in the project plans or project specifications, compaction shall be performed within 2 percentage points of the optimum moisture content.

(A) Below pavement, curb and gutter, attached sidewalk, roadway shoulders, and other areas within right-of-way subject to vehicular traffic - 95 percent

(B) Below detached sidewalk not subject to vehicular traffic - 85 percent

Subgrade Tolerances: Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be directly placed shall not vary more than 1/4 inch from the specified grade and cross-

section without approval from the Engineer. Subgrade upon which sub-base or base material is to be placed shall not vary more than 3/4 inch from the specified grade and cross-section without approval from the Engineer. Variations within the above specified tolerances shall be compensating so that the average grade and cross-section specified are met.

**Grading of Areas Not To Be Paved:** Areas where grade only is called for on the plan shall be graded to meet the tolerances for the subgrade where subbase or base material is to be placed. The surface shall be constructed to a straight grade from the finished pavement elevations shown on the plans to the elevation of the existing ground at the extremities of the area to be graded.

**Protection of Existing Facilities:** The Contractor shall exercise extreme caution to prevent debris from falling into manholes or other structures. In the event that debris should fall into a structure, it shall immediately be removed.

**Foundation Material Treatment:** When footing concrete or masonry is to rest upon rock, the rock shall be fully uncovered and the surface thereof shall be removed to a depth sufficient to expose sound rock. The rock shall be roughly leveled off or cut to approximate horizontal and vertical steps, and shall be roughened. Seams in the rock shall be grouted under pressure or treated as the Engineer may direct and the cost thereof will be paid for as extra work. When no piles are used and footing concrete or masonry is to rest on an excavated surface other than rock, care shall be taken not to disturb the bottom of the excavation and final removal of the foundation material to grade shall not be made until just before the concrete or masonry is placed. Excavation below grade shall be replaced with the same class of concrete specified for the structure or with 1 ½ sack controlled low strength material as specified in Section 728. When the replacement material is structural concrete, the material shall be placed at the same time as the structure material. Placement of controlled low strength material shall be per Section 604, which will require a time lag between placement of the material and the structural concrete. The placement of the additional material shall be at no cost to the City except when over-excavation is directed by the Engineer.

The excavation for structures shall be completed to the bottom of the footings before any piles are driven therein, and excess material remaining in the excavation after pile driving shall be removed to the elevation of the bottom of the footings.

When piles are used and ground displacement results from pile driving operations, the Contractor shall at his expense excavate or backfill the footing area to the grade of the bottom of the footing as shown on the plans with structure backfill material.

**Inspection:** When any structure excavation is completed, the Contractor shall notify the Engineer who will make an inspection of the excavation. No concrete or masonry shall be placed until the excavation has been approved by the Engineer.

**Structure Backfill:** Prior to the placement of structure backfill, the Contractor shall remove all loose, unstable materials from the sides of the structure excavation that may constitute a safety concern or impact proposed backfill operations. The Contractor shall then compact the bottom of the remaining open structure excavation to a uniform density of not less than 95 percent maximum dry density. With the approval of the compaction of the bottom of the open structure excavation by the Engineer, the Contractor may start the placement of the Structure Backfill.

Structure Backfill to be placed against concrete structures designed to retain earth loads, such cantilever concrete retaining walls, short concrete gravity walls and masonry walls:

(A) Shall conform to the material and the gradation requirements for Select Material, Type A or B in Table 702-1 unless otherwise approved by the Engineer.

(B) Shall not be placed until the concrete has reached its full design strength.

(C) Shall be placed in layers not more than 8 inches in depth before compaction, when compacted by pneumatic or mechanical tamping devices.

(D) Shall be uniformly compacted to at least 95 percent of maximum density.

Structure Backfill placed against concrete structures not designed to retain earth loads:

(A) Shall not be placed until the concrete has attained a minimum compressive strength of 2500 psi in compression as specified in Section 725 and in no case less than 72 hours after casting.

(B) Shall be uniformly compacted to at least 95 percent of maximum density.

Where a structure is located within an existing street, proposed street, or paved area shall be compacted to the minimum density specified in Table 601-2, for Type I or shall be filled with ½ sack or 1 sack controlled low strength material as specified in Sections 604 and 728.

Minor structures, as defined in Section 505.1.1, when furnished as precast structures, shall be placed on a compacted layer of Structure Backfill at least 6 inches in depth that conforms to the material requirements of Section 206.4.2. The layer shall be shaped to fit the bottom surface of the precast unit and compacted to not less than 100 percent maximum density. The Structure Backfill shall be at or near optimum moisture content, as approved by the Engineer. After the unit has been initially set in place and checked for line and grade, it shall be removed, and any defects in its bearing area or line and grade shall be corrected by trimming and by placing and compacting similarly moistened Structure Backfill and the unit reset in place. If in the opinion of the Engineer the bearing area, line, or grade of a set precast unit is defective, the Contractor shall remove the unit, correct the bearing area and reset the unit at no additional cost to the City.

Precast units shall be installed on compacted, shape-conformed Structure Backfill in reasonable conformity with the lines and grades shown on the project plans.

Unless otherwise provided in the plans and/or special provisions the maximum density shall be determined using procedures defined in Section 301.

Measurement:

Measurement for Subgrade Preparation will be by the square yard. The area to be measured will be the total accepted area of new asphalt concrete pavement and new Portland cement concrete pavement (PCCP), including paved shoulders, tapers, turnouts, and unpaved roadway shoulders. Subgrade Preparation area measured will also include the accepted surface area of sidewalk and driveways that are surfaced with aggregate base, select materials and non-surfaced areas designated for vehicle traffic, and areas requiring retaining wall and toe-down sidewalk footing installation.

Except for PCCP, the area under Portland cement concrete surfaces such as concrete curb and gutter, sidewalk, concrete driveways and driveway entrances, and concrete alley entrances will not be included in the Subgrade Preparation measurement.

Project earthwork quantities for Roadway Excavation, Borrow Excavation, and Fill Construction shall not be separately measured. Payment for said earthwork items shall be included in the unit price for Subgrade Preparation and the contraction or installation of the items to which such excavation and backfill are incidental or appurtenant.

Payment:

Payment shall be compensation in full for stripping, scarifying, grading, excavating, hauling, filling, compacting, and disposing of excess or unsuitable materials, together with all costs incidental thereto.

No additional measurement for payment will be made for excavation resulting from lack of side support for structure excavations, nor due to carelessness of the Contractor.

Hauling, placing, and compacting surplus earthwork in embankments, or otherwise disposing of the material, shall be included in the contract price paid for Subgrade Preparation.

#### 2.2.24 CHANNEL EXCAVATION (INCL. HAUL OFFSITE)

This item consists of excavating and exporting earthwork as specified in the plans. Channel excavation will be in accordance with section 210 of the MAG Std Specifications. Excavated material not used for backfill will be exported off site.

Payment will be made at the contract unit price bid per cubic yard, to the nearest yard, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to excavate and export earth material for the channel excavation as described or specified in the contract documents. The contractor is encouraged to review the Geotechnical Report for the project.

#### 2.2.25 AGGREGATE BASE COURSE

The work under this item is for the installation of aggregate base course, including materials, excavation, backfill, and compacting. Methods and materials shall conform to MAG Standard Specification 310 except as modified herein.

Measurement for Aggregate Base Course shall be per ton. The accepted quantities for Aggregate Base Course measured as provided above will be paid for at the contract unit price, which will be full compensation for the work complete in place, as shown on the plans and as specified in the specifications.

#### 2.2.26 CONCRETE SIDEWALK PER MAG STD DTL 230 WITH MESH

The work under this item will consist of the construction of concrete sidewalk, complete in place, as shown on the plans. Mesh shall be included unless otherwise noted on the plans. Concrete shall be Class B per MAG Section 725. Methods shall conform to MAG Section 340. Welded wire fabric shall be per MAG Section 727 and placed per MAG Section 505. The surface shall be broom finished.

Measurement and payment for this item shall be at the unit price per square foot as specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

#### 2.2.27 CONCRETE PAVERS

The work under this item will consist of the construction of concrete pavers, complete in place, as shown on the plans. Construction of pavers shall be in accordance with Section 342 of the MAG Standard Specifications. The color of the pavers shall be approved by the Engineer and shall match the color of the existing pavers located in the adjacent Tlaquepaque property parking area and conform to ASTM C 979.

Measurement and payment for this item shall be at the unit price per square foot as specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

#### 2.2.28 RETAINED CURB

The work under this item will consist of construction of the retained curb detail complete in place per the detail in the plans. This includes curb terminations and transitions as shown on the plans as well as the decorative steel railing. Concrete shall be Class A per MAG Section 725. Methods shall conform to MAG Section 340. Measurement and payment for this item shall be by the linear foot at the unit price specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

Measurement for curb terminations and transitions shall be included with the linear measurement of the modified MAG single curb as shown on the plans.

#### 2.2.29 MEDIAN BOLLARDS AND CHAIN (SPECIAL DETAIL)

The work under this item will consist of installing two bollards, chain, and latching mechanism per plans detail and at locations shown in the plans. Methods shall conform to MAG Standard Det 222.

Measurement and payment for procuring and installing two bollards, chain, and latching mechanism with all needed hardware. Measurement and payment shall be at the unit price per each item specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

#### 2.2.30 3-FT MAN GATE WITH LOCK

The work under this item consists of installation of a 3-ft man gate along the railing adjacent to the existing storm drain outlet as shown in the plans. Posts and rails shall match the material used for the adjacent railing. Construction shall follow MAG Section 520, and 420 (where applicable). Fencing components shall be painted in accordance with Section 530 and the aesthetic plans.

Measurement and payment shall be at the unit price per each as specified in the Bid Schedule and will be full compensation for all labor and materials as shown in the plans.

#### 2.2.31 REINFORCED CONCRETE CANTILEVER RETAINING WALL

The work under this item will consist of construction of reinforced concrete cantilever retaining walls in place. This item includes footing, keyway construction and retaining wall buildout details as specified on the plans. Reinforced concrete cantilever retaining wall construction shall conform to Section 914 of the ADOT Standard Specifications. Geocomposite Wall Drain requirements shall conform to Section 203.503 (C) of the ADOT Standard Specifications. See plans for rustication requirements.

The Contractor may submit for approval an alternate material of concrete masonry block for the cantilever retaining wall. Approval by the Engineer will be based on the alternative being adequate for the ground conditions, workspace constraints and water pressures at the location(s) for which the alternative method is intended. Material and construction shall conform to MAG 510 specifications. Contractor shall submit wall and foundation calculations and shop drawings for Engineer and City approval. Shop drawings and calculations shall be prepared by and bear the seal and signature of a Professional Engineer. Contractor shall provide details, materials and color submittals as needed to accomplish the aesthetic treatments as shown on the plans if using alternative wall construction methods, for approval by the City Representative. Additional material and color field mockup/samples shall also be provided for approval by the City Representative prior to construction for all aesthetic treatments.

Measurement and payment for this item shall be by square foot of wall constructed and measured along front face of wall from top of footing to top of wall. Pay item includes all labor and materials required for necessary excavation, footings, backfilling, drainage, reinforced concrete wall with footing and applicable rustication and color coating as described herein and on the project plans.

#### 2.2.32 MASONRY PROPERTY WALL

The work under this item will consist of the construction of the new masonry property wall. This item includes foundation construction, masonry wall construction, placement of reinforcement and grout in cells, arch sign reconstruction, epoxy anchors, bituminous joint filler, polystyrene and relocation of the salvaged stone cap and abode tile. Methods of concrete masonry wall construction shall conform to MAG Section 510. Dowel anchor methods shall conform to MAG Section 505.4.

Compact backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

Aesthetic treatment to match existing wall. Paint samples shall be submitted for acceptance. Final treatments shall be approved by the Engineer.

Concrete masonry unit material requirements shall be per MAG Section 775.

Measurement and payment for this item shall be by square foot of wall constructed and measured along front face of wall from top of footing to top of wall. The pay item includes all labor and materials required for necessary excavation, foundation, backfilling, aesthetic surface treatment and relocation of the salvaged stone cap and adobe tiles to match the existing wall.

#### 2.2.33 SHORT CONCRETE GRAVITY WALL

The work under this item will consist of the construction of the short concrete gravity wall.

Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis.

Joint seal behind wall shall be two layers of 30# smooth roofing paper or geotextile fabric. Mop all contact surfaces of concrete and roofing paper or geotextile fabric with cut-back asphalt. Stop roofing paper or geotextile fabric 6" below top of wall.

Aggregate drainage layer with weep holes shall be provided at the back of wall. Aggregate shall be per MAG Table 605-1 F1 or F2. Geosynthetic fabric shall be per MAG Table 796-2 Class B. Provide a continuous 1'x1' clean gravel or crushed rock drain. Wrap drainage area with geotextile fabric. Provide 8"x8" galvanized mesh with 1/4" openings, at the inside end of the PVC drainpipe. Provide 2" diameter PVC drainpipe (Sch. 40) at 10 ft. maximum spacing.

Measurement and payment for this item shall be by square foot of exposed face of wall. The cost of reinforcing steel, face texture, finish, joint seal, drainpipes, drainage layer, galvanized mesh, and geotextile fabric to be included in the contract unit price.

#### 2.2.34 REINFORCED CONCRETE SLAB OVERHANG

The work under this item will consist of the construction of the reinforced concrete slab overhang. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis. The surface shall be broom finished to match concrete sidewalk.

Measurement and payment for this item shall be by square foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, finish, falsework and formwork to be included in the contract unit price.

#### 2.2.35 NEW MODIFIED MAG 206 CONCRETE SCUPPER

This work will consist of the installation of a Concrete Scupper as shown on the construction plans and details. All concrete shall be Class B, Sedona Red, in accordance with MAG Section 725. Reinforcing steel shall be in accordance with MAG Section 727.

The unit price bid for Each shall be made per unit price. Payment shall be compensation in full for the item complete in place including any and all associated cost for material and labor for construction.

#### 2.2.36 NEW DRAIN INLET

This item includes providing and installing a drain inlet that is equal or equivalent to the following:

Nyloplast 12" Inline Drain part number 2712AG08D (schedule 80);

Nyloplast 12" square, Pedestrian H-10 grate;

Nyloplast 8" diameter riser section part number 2908AG to a height sufficient to comply with the plans and details;

or approved equal. Appurtenant fittings required to install the drain inlet may be required.

The unit price bid for Each shall be full compensation to provide and install the unit in place and functional according to these specifications and the manufacturers recommendations. Filter fabric shall be considered incidental. Cut sheets for the proposed drain inlet with details showing the installation configuration shall be submitted for approval prior to construction.

### 2.2.37 PERMEATION GROUTING

The work specified in this section consists of furnishing and injecting cementitious grout beneath the cantilever retaining wall footings, as indicated in the plans. Contractor shall use permeation grouting to create a scour-resistant mass that extends from top of bedrock to bottom of footing beneath planned walls. The Contractor may submit for approval alternate methods for providing equivalent scour protection to bedrock. Approval by the Engineer will be based on the alternative being adequate for the ground conditions, workspace constraints and water pressures at the location(s) for which the alternative method is intended.

#### References

A. Abbreviations and Acronyms:

1. OSHA – Occupational Safety and Health Administration.
2. SDS – Safety Data Sheet.

B. Definitions:

1. Permeation Grouting: Filling of voids in a soil or rock mass with a grout fluid at a low injection pressure to strengthen and/or reduce permeability, while not destroying original structure of soil or rock.

C. Cited Standards:

1. ASTM International (previously American Society of Testing and Materials, ASTM).
2. ASTM C42 - Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
3. ASTM C109 - Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-Inch or 50-mm Cube Specimens).
4. ASTM C191 - Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.
5. ASTM C827 - Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
6. ASTM C939 - Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
7. ASTM C940 - Standard Test Method for Expansion And Bleeding of Freshly Mixed Grouts for Preplaced Aggregate Concrete in the Laboratory.
8. ASTM D4219 - Unconfined Compressive Strength Index of Chemical Grouted Soils.
9. ASTM D4320 - Laboratory preparation of Chemically Grouted Soil Specimens for Obtaining Design Strength Parameters.
10. ASTM D4630 - Standard Test Method for Determining Transmissivity and Storage Coefficient of Low-Permeability Rocks by In Situ Measurements Using the Constant Head Injection Test.
11. ASTM D5202 - Standard Test method for Determining Triaxial Compression Creep Strength of Chemical Grouted Soils.
12. ASTM D6910 - Standard Test Method for Marsh Funnel Viscosity of Clay Construction Slurries.
13. For additional references, refer to the General Provisions and Supplementary Provisions.

#### Pre-grouting Conference

A. Conference: Conduct a pre-grouting conference at work Site office, or at another agreed location, before commencement of permeation grouting works (and before drilling of grout holes) to review the following, as a minimum:

1. Safety.



2. Drill hole locations and utilities.
3. Site supervisory staffing.
4. Drilling means, methods and sequence.
5. Grouting means, methods and equipment and sequence.
6. Quality control procedures.
7. Geotechnical Instrumentation and monitoring, and protection of existing facilities, structures, utilities and railroad infrastructure.

#### Submittals

- A. Qualification Date: Not less than sixty (60) days before commencing permeation grouting operations and testing, submit the following
  1. Resume for proposed Grouting Supervisor.
  2. Resume for proposed Contractor's Design Engineer.
  3. Grouting Contractor's name, qualifications, and evidence of work previously performed demonstrating requirements specified herein.
  4. Independent Laboratory Testing Firm's name, qualifications, certifications and experience demonstrating requirements specified herein.
  5. Organization chart showing supervisory staff and site roles and responsibilities for each position.
- B. Grouting Method Statement: Not less than sixty (60) days before commencing permeation grouting operations and testing, submit the following:
  1. Identification and scope of permeation grouting works.
  2. Details of proposed permeation grout materials, including base, reactant, accelerators and admixtures. Provide manufacturer's/supplier's Safety Data Sheets (SDS) for proposed permeation grouting materials.
  3. Verification of proposed grouting material for each grouting site based on groutability characteristics of existing subsurface conditions.
  4. Drawings showing configuration and details of complete grouting system, proposed equipment, and method of construction.
  5. Plant, equipment and materials to be used in permeation grouting works, including automatic data acquisition and recording of permeation grouting parameters and grouting performance data including depths, pressures, flow rate, grout volumes injected, and gel and setting times.
  6. Sample daily grouting records and forms as required in Article 1.7.F, including output from automatic data acquisition and recording equipment showing at a minimum the following:
  7. Subsurface soil, rock and groundwater description at each site of permeation grouting works, verifying suitability of selected permeation grouting methodology for existing ground conditions.
  8. Details of pre-grouting trial testing in accordance with Article 1.2.
  9. Grout mix design and laboratory testing requirements to confirm permeation grouted mass meets design requirements set forth herein.
  10. Procedures for ensuring control of grout mix proportions, setting (gel) times, flow rate, pressures, and injected volumes.
  11. Methods and equipment for location of boreholes, drill hole alignment and depth, drilling and supporting grout holes for grout pipes, including methods for advancement of holes through obstructions, including but not limited to corestones, concrete, rubble foundations, timber and steel.
  12. Methods and equipment for management of drill cuttings, spoils, drilling fluids, flush water, unused grout, and waste grout, including collection, temporary site storage, transportation, and disposal.

13. Equipment, procedures and forms for drilling, sampling and recording post-permeation grouting exploratory boreholes. Have procedures describe in detail means of drilling to ensure quality of core recovery and without adverse changes in water content to core.
  14. Equipment, measurement method and accuracy and precision for verifying inclination and azimuth (orientation) of drill holes, prior to installation of grout pipes.
  15. Procedures for field modifications to grout pipe locations, inclination and depth required in the event that obstructions are encountered.
  16. Field quality control procedures.
- C. Grouting Shop Drawings: Not less than forty-five (45) days before commencing permeation grouting operations at any specific grouting site, submit the following for each site:
1. A plan for each grouting site showing arrangement of grout plant and injection equipment, including schematic diagram showing layout of mixer, agitator, tanks, pumps, grout and water lines and directions of flow circulation.
  2. Grout mix design.
  3. Plan showing proposed access/egress routes for material supply and for personnel for each grouting site.
  4. Location, inclination, depth, identification number and labeling of grout pipes for each zone in ground to be grouted.
  5. Spacing of individual sleeve ports for each grout pipe.
  6. Grouting sequence for groups of grout pipes and in individual grout pipes, and anticipated range of injection parameters including pressure, volume, flow rate, refusal criteria (i.e. criteria for termination of grouting such as maximum volume injected, refusal flow rate, maximum injection pressure, etc.).
  7. Calibration records for flow meters, scales and gages from a laboratory testing agency and certification of master gage calibration.
- D. Test and Evaluation Reports: Not less than sixty (60) days before commencing permeation grouting operations and testing, submit a description of laboratory testing program to be performed to establish grout mix design and grout mix properties that includes as a minimum:
1. For cement grout and micro-fine cement grout, records of field testing of wet grout samples for sedimentation (bleed), setting time, efflux time or Marsh Funnel viscosity, specific gravity, as specified herein.
  2. For chemical grout, records of field testing of wet grout samples for specific gravity, silicate to soda ratio, syneresis, gel and setting times, and compatibility with local groundwater chemistry, as specified herein.
  3. Examples of laboratory test result sheets from Independent Laboratory Testing Firm for tests specified herein.
- E. Schedule: Not less than sixty (60) days before commencing permeation grouting operations and testing, submit a schedule for permeation grouting for each separate location that includes task durations for mobilization, drilling, grout pipe installation, grouting, post-permeation grouting exploration, laboratory testing, and final grouting reports.
- F. Permeation Grouting Performance Records:
1. Provide the following information in daily grouting reports during permeation grouting operations at each site:
    - a. Drilling records including equipment and method of drilling, driller's name and driller's helper, date of installation, specific grout holes drilled, their depths and deviation from required alignment, and as-built location of sleeve ports.
    - b. Beginning and completion times for injection of each port in each sleeve port pipe.

- c. Grout mix data, including mix proportions, viscosity, setting times, and any modifications made to mix during grouting operations.
    - d. Injection pressures (initial, average, final) and flow rate.
    - e. Grout takes (injection volumes) for each grout pipe sleeve port and total volume for each pipe.
    - f. Other pertinent observations such as grout escapes, ground heave or ground settlement, or other unusual behavior.
    - g. Observations including but not limited to depth to groundwater, loss of drilling fluids, drill hole instability, encountering gas, contaminated groundwater or soils, odors.
    - h. Details of field modifications.
  - 2. Provide permeation grouting performance records in an chart type and/or a graphical representation format approved by the Project Engineer for ease of review and evaluation. In addition to data generated by automatic data acquisition and recording equipment, provide cross-sections of each grout line across grouted zone showing percentage of actual volume of grout injected to theoretical volume, final injection pressure, and stage of grouting (i.e. primary/secondary/tertiary) for each grout sleeve.
- G. Laboratory Test Results: Provide laboratory test reports documenting the following test results, within three (3) days after test to which is corresponds has been completed:
- 1. Initial unconfined compressive strength determinations on laboratory prepared trial mixes and soil-grout samples as specified herein.
  - 2. Unconfined compressive strength determinations on soil-grout core samples taken from grout zones during production grouting operations.
- H. Final Permeation Grouting Report: Within thirty (30) days of completion of permeation grouting work at any site, provide a detailed summary report to include, but not limited to, the following:
- 1. The mix design and grouting parameters used.
  - 2. Summary of post permeation grouting exploration.
  - 3. Field permeability test results from pre-grouting and post-grouting bore holes.
  - 4. Data generated from automatic data acquisition and recording equipment.
  - 5. Cross-sections of each grout line across grouted zone showing actual injected volume and final injection pressure for each grout sleeve.
  - 6. An evaluation of grouting results relative to intent of permeation grouting program. As part of this evaluation, identify areas requiring regrouting because of defect in initial grouting and re-grout to meet design requirements. Develop proposed limits and procedures for re-grouting and submit to the Project Engineer for review.

#### Delivery, Storage and Handling

- A. Deliver materials in undamaged containers bearing manufacturer's original labels or if delivered in bulk with certificates of origin.
- B. Store and handle grout materials in accordance with manufacturer's recommendations and SDS.

#### Quality Assurance

- A. Grouting Contractor or Subcontractor: Work covered by this Section is specialized. Have a Grouting Contractor or Subcontractor specialized in permeation grouting perform work after demonstrating that it has at least ten (10) years of permeation grouting experience. Have Grouting Contractor or Subcontractor demonstrate successful performance on at least two (2) permeation grouting projects of similar scope, purpose and complexity in previous ten (10) years. Have Grouting Contractor or Subcontractor performing work must demonstrate that it is experienced

with use of specified continuous mixing procedure, automatic data acquisition and recording equipment, and types of permeation grout.

- B. Grouting Supervisor: A full time grouting supervisor must be assigned to Work on a full-time basis. Grouting Supervisor must demonstrate that they have been in responsible charge of similar permeation grouting operations for at least five (5) years (or as approved by the Project Engineer). Have Grouting Supervisor present at Work Site during permeation grouting operations. Employ Grouting Supervisor who is knowledgeable of aspects permeation grouting as currently practiced, including means and methods for drilling of grout holes, installation of sleeve port pipes, grout formulation, properties and admixtures, mixing methods, grout injection, field testing for grout mix and injection quality control, including use of automatic data acquisition and recording equipment.
- C. Contractor's Design: A Professional Engineer licensed in the State of Arizona with demonstrable evidence that design engineer has gained appropriate and relevant grouting experience on no less than two (2) projects in successful design and responsible supervision of grouting applications similar to those specified herein. Have Contractor's design engineer sign and seal submittals, including work plans, Shop Drawings, reports and calculations.
- D. Independent Laboratory Testing Firm: Assign laboratory testing to and have performed by an independent testing firm that is certified in testing of soils and construction materials and can demonstrate current certification under AASHTO Materials Reference Laboratory (AMRL) program. Have Independent Laboratory Testing Firm demonstrate at least three (3) years of experience in performing standardized tests that are required for permeation grouting operations as specified herein and employ laboratory testing technicians who are experienced and qualified to perform particular tests specified herein.

## Products

- A. CHEMICAL GROUT
  1. Use chemical grout type composed of a liquid sodium silicate base, reactant, water, accelerator, and other acceptable admixtures as required.
  2. Use grout that is capable of penetrating ground at Site, and that has gelling characteristics that will enable grout to form a ground-grout mass.
  3. Use chemical grout mix such that when injected into ground at zones and depths per the Drawings, unconfined compressive strength of soil meets or exceeds a 28 day design strength of 2500 psi.
  4. Design trial mix and submit results of trial batches formulated and tests conducted by Independent Laboratory Testing Firm using trial grout mix and samples of ground obtained from work site from zones to be injected, that have been prepared in laboratory at their characteristic in-situ relative density.
  5. After review and acceptance by the Project Engineer, do not change mix designs without performing another trial mix and laboratory testing with results that are acceptable to the Project Engineer.
  6. Use base material for chemical grout that has a specific gravity of 1.4 to 1.5 (41.5 degrees to 48.3 degrees Baume) and a silicate to soda ratio of 3.2 to 3.35, or as otherwise approved by the Project Engineer.
  7. Use a mix with a sodium silicate concentration of chemical grout not less than 50-percent of mix by volume.
  8. Deliver sodium silicate in sealed containers or certified tank trucks and accompanied by supplier's certificate of origin.
  9. Sodium silicate in un-gelled liquid form, while not considered toxic, is strongly alkaline; have handled only by authorized personnel and in accordance with manufacturer's recommendations and SDS.
  10. Use reactant that is organic base type and that when properly mixed with other grout components, provides required strength development and a gel with controllable gel times.

- Use materials and mix such that resulting gels exhibit less than 5 percent syneresis in injected sample in 30 days when mixed with appropriate amounts of sodium silicate, water, and accelerator, and do not exhibit objectionable odors such as ammonia.
11. Use accelerator, if required, that is commercial grade, water-soluble calcium chloride or other metal salt and contains a minimum amount of insolubles.
  12. Use chemical grout that is non-toxic and non-flammable during and after grouting.
  13. Meet requirements specified herein for initial laboratory testing performed as part of test program to demonstrate that trial grout mix meets minimum unconfined compressive strength requirement, tested in accordance with ASTM D4320.
  14. For grout, use potable water that is free of constituents deleterious to gelling characteristics and strength development of chemical grout.
  15. If initial laboratory developed design mix requires adjustment as chemical grouting test program and production chemical grouting proceed, then test revised mix design, in accordance with ASTM D4320, ASTM D4219 and ASTM D5202.
  16. Slight modification to mix is anticipated in field for purposes of controlling grout gelling (setting) times. It is not required to submit these minor modifications for review; however, document modifications to mix as part of Quality Control procedures and report to the Project Engineer within 48 hours of each mix modification.
  17. Utilize chemical grout that is compatible with local groundwater chemistry.
  18. Use chemical grout material with in-situ life span of sufficient time to maintain its required strength and permeability characteristics for duration of construction.

**B. CEMENT AND MICRO-FINE CEMENT GROUT**

1. Use cement and micro-fine cement grout type composed of cement or micro-fine cement, water, and other acceptable admixtures as required, subject to approval of the Project Engineer.
2. Use potable water in grout.
3. Use grout capable of penetrating soils at Site, and with characteristics that will enable grout to form a ground-grout mass.
4. Use a cement and micro-fine cement grout mix such that when injected into ground at site, unconfined compressive strength of soil meets or exceeds a 28 day design strength of 2500 psi.
5. Design trial mix and submit results of trial batches formulated and tests conducted by Independent Laboratory Testing Firm.
6. After review by the Project Engineer, do not change mix designs without performing another trial mix and laboratory testing with results that are acceptable to the Project Engineer.
7. Handle cement and micro-fine grout in accordance with manufacturer's recommendations. Store cement in plastic wrapped bags and within covered areas protected from weather.
8. Confirm cement, fly ash, water and admixtures conforms to MAG Section 725. Additionally, provide Micro-Fine Cement that has a fineness of at least 650 Blain (m<sup>2</sup>/kg) tested in accordance with ASTM C204, and 99-percent of material finer than 40-microns and 50 percent of material finer than 8-microns.
9. Use admixtures (plasticizers/superplasticizers) that are an acceptable compound possessing such characteristics that they will tend to hold solid constituents of grout in colloidal suspension and they will minimize shrinkage of grout mix. Use admixtures compatible with cement and water used in grouting program. Have admixtures furnished in moisture-resistant paper sacks shipped in sealed containers and handled and stored so as to avoid absorption and moisture, damage and waste. Material that has become caked due to moisture absorption will be rejected.
10. In the event that pre-hydrated bentonite is required as an anti-bleed agent, have it furnished, handled and stored in accordance with manufacturer's recommendations.
11. Use non-shrink, non-metallic, factory premixed grout for sealing grout pipes and patching holes in precast concrete tunnel lining segments. Use grout that shows no shrinkage and a maximum of 4.0-percent expansion when tested in accordance with ASTM C827. Use

- grout with initial set time not less than 45 minutes. Use grout with compressive strength not less than 5000-psi when tested in accordance with ASTM C109 after 28 days.
12. Make slight modifications, if required, to cement and micro-fine cement grout mix to meet field conditions for purposes of controlling grout setting times. These slight modifications are not required to be submitted for review; however, document these slight modifications to mix as part of Quality Control procedures and report to the Project Engineer within forty-eight (48) hours of each mix modification.
  13. Use cement grout and micro-fine cement grout that has a bleed, when tested by sedimentation in accordance with ASTM C940 and approved by the Project Engineer, that is consistent with the requirement to achieve a grouted mass that meets the design requirements set forth herein.
  14. Use cement grout and micro-fine cement grout that has a specific gravity, when measured by Baroid mud balance and approved by the Project Engineer, that is consistent with the requirement to achieve a grouted mass that meets the design requirements set forth herein.
  15. Use cement grout and microfine cement grout that has an efflux time when tested in a flow cone in accordance with ASTM C939, or a Marsh Funnel (MF) viscosity in accordance with ASTM D6910 and approved by the Project Engineer, that is consistent with the requirement to achieve a grouted mass that meets the design requirements set forth herein.
  16. Use cement grout and micro-fine cement grout with a setting time when tested with a vicat needle in accordance with ASTM C191 and approved by the Project Engineer, that is consistent with the requirement to achieve a grouted mass that meets the design requirements set forth herein.
  17. Prepare samples of wet cement grout and micro-fine cement grout for unconfined compressive strength testing that are cast and cured in sets of three (3), using grout cube molds that are 2-inches by 2-inches by 2-inches in size, and in accordance with ASTM C109.
  18. Unless otherwise directed by the Project Engineer, waste cement grout and microfine cement grout that cannot be placed, for any reason, within one (1) hour after mixing.

#### Execution

- A. The Work includes, but is not limited to, the following:
  1. Performing a pre-production grouting test program at each grouting location to evaluate effectiveness of proposed methods, materials, and equipment to produce soil-grout masses meeting geometric and material property requirements shown on the Drawings and as specified herein.
  2. Drilling holes for installing permeation grout pipes with sleeve ports allowing controlled, successive, and phased grouting thus forming a contiguous grouted mass at locations shown on the Drawings.
  3. Continuous core sampling of selected soil-grout masses by core drilling.
  4. Laboratory unconfined compressive strength testing to confirm and verify conformance of grouted soil to specified strength requirements.
  5. Performing re-grouting in areas and at depths determined to be deficient from post-permeation grouting exploration or from review of graphical grouting records.
- B. Backfill with cement grout any grout pipe lost, damaged, or plugged because of mechanical failure of equipment, lack of protection, inadequacy of grout supplies, or improper drilling, grout mixing, or injection procedures. Replace with another grout pipe.
- C. Where permeation grouting using chemical grout is used to provide a cut-off for groundwater heads in excess of five (5) feet, maintain standby grouting equipment and a supply of permeation grout on-site during subsequent excavation and tunneling operations in case significant water inflows are encountered and it is determined that remedial grouting is required in advance of

further excavation. As a minimum, keep on-site a grout pump and appropriate appurtenances and five (5) 50-gallon drums of chemical grout along with required amount of reactant until completion of excavation work.

- D. Where permeation grouting using cement or micro-fine cement grout is used to provide a cut-off for groundwater heads in excess of five (5) feet, maintain standby grouting equipment and a supply of permeation grout on-site during subsequent excavation and tunneling operations in case significant water inflows are encountered and it is determined that remedial grouting is required in advance of further excavation. As a minimum, keep on-site a grout pump and appropriate appurtenances and 2000-pounds of cement and/or micro-fine cement along with required amount of admixtures until completion of excavation work.

#### Pre-Production Test Program

- A. Develop and execute a test program before start of production grouting at each grouting site to evaluate effectiveness of proposed methods, materials, and equipment to produce soil-grout masses meeting geometric and material property requirements shown on the Drawings and as specified herein.
- B. Submit location and layout of test program for review and approval of the Project Engineer.
- C. Have test program meet the following requirements:
  - 1. Execute programs in accordance with procedures submitted as specified herein and as approved by the Project Engineer.
  - 2. Drill a minimum of three post-grouting exploratory boreholes at each test program site in accordance with requirements of ASTM D2113. The Project Engineer will select locations of exploratory boreholes.
  - 3. Test a minimum of sixteen (16) ground-grout mass core samples at each test location, eight samples at 14 days, and eight samples at 28 days. Perform strength testing (unconfined compressive strength) of core samples in accordance with requirements of ASTM C 42.
  - 4. Record drilling and permeation grouting parameters as specified herein.
  - 5. Maintain and submit daily records for grouting performed for each trial program. Include information specified herein.
  - 6. After completion of ground-grout mass coring, backfill boreholes in grout columns with cement grout. Fill boreholes with grout from bottom up by using a tremie pipe or drilling rods.
  - 7. Perform at least three packer permeability tests in boreholes, or as otherwise approved by Engineer.
  - 8. Submit results of grouting trial to the Project Engineer together with an Interpretative Report assessing results of trial and proposing any necessary changes to Method Statement and Procedures. Subject to results of test programs, the Project Engineer may require Contractor to develop modifications to proposed production grouting procedures to achieve satisfactory results. If trial fails to demonstrate that selected system and procedures are capable of achieving required physical and engineering properties in grouted soil mass, then modify procedures and perform an additional trial section to demonstrate revised procedures.

#### Permeation Grouting Equipment

- A. General:
  - 1. Use permeation grouting equipment of a type, capacity, and mechanical capability suitable for doing Work.

2. Maintain permeation grouting equipment in satisfactory operating condition.
  3. Have spare parts, back-up equipment, and maintenance personnel available to maintain permeation grouting equipment in satisfactory operating condition during execution of permeation grouting work, and to ensure uninterrupted grout injection in case of mechanical breakdown or equipment malfunction during course of work.
- B. Drilling Equipment: Use drilling equipment of a type and capacity suitable for drilling required hole diameters, inclinations, and depths for installing grout pipes at locations where permeation grouting is to be performed and in ground conditions indicated in Contract Documents and any additional subsurface investigations undertaken by Contractor.
- C. Chemical Grouting Equipment:
1. Plant/Pumps:
    - a. Use a chemical grout plant of continuous mixing type that is capable of supplying, proportioning, mixing and pumping grout with set and gel times in accordance with accepted Work Plan.
    - b. Batch type systems will not be permitted.
    - c. Equip each main pump with recording, positive displacement meters.
    - d. Construct pumping equipment, including meters, of materials that are non-corrodible for intended products.
    - e. Operate meter independently of viscosity of metered fluid.
    - f. Use pumping unit capable of varying rate of pumping while maintaining constant mix component ratios.
  2. Grout Pipes: Use grout pipes of regroutable sleeve-port type, with grout ports covered by rubber sleeves.
  3. Double-Packers: Use an internal double-packer to inject grout at a specific sleeve port. Use packers that are capable of resisting maximum grouting pressure without leakage during entire injection.
  4. Piping and Accessories:
    - a. Equip pumping unit with piping and/or hoses of adequate capacity to carry base grout and reactant solutions separately to point of mixing.
    - b. Have hoses come together in a "Y" fitting containing check valves to prevent backflow.
    - c. Follow "Y" fitting with a suitable baffling chamber.
    - d. Place a sampling valve beyond point of mixing and baffling chamber, and behind "Y" to facilitate flushing grout from mixing hose and baffle between grouting sessions.
    - e. Use separate automatically recording flow rate indicators and pressure gages to monitor distribution of proportioned grout, under pressure, to grouting locations.
  5. Chemical Tanks: Store chemical in metal tanks that are non-corrodible for intended products and that are suitably protected from accidental discharge by valving and other necessary means. Use tanks with a capacity sufficient to supply at least one day's demand of grouting materials so as not to interrupt Work in case of chemical delivery delays.
  6. Chemical Testing Apparatus: Provide necessary quality control testing apparatus at Work Site including, but not limited to, hydrometers, pH paper, graduates, and other devices that are required to conduct chemical material acceptance tests, chemical proportioning tests, and grout quality tests for proper quality control of Work, and in accordance with cited standards.
  7. Monitoring of Permeation Chemical Grouting Performance: Use equipment to measure and record chemical grouting parameters that is automatic, and collects data in real-time.
- D. Cement and Microfine Cement Grouting Equipment



1. General: Use equipment for mixing and injecting grout that is designed for grouting service and maintain satisfactory operating condition. Use equipment that is capable of satisfactorily mixing and agitating grout and forcing it into grout holes at required pressures.
2. Mixer: Use a grout mixer that is a high shear colloidal mixer providing a homogenized mix and having an impeller speed of at least 1,500-rpm. Use colloidal mixer that is of sufficient capacity to ensure an uninterrupted supply to agitator and grout pump.
3. Grout Proportioning Equipment: Provide means of accurately proportioning and measuring grout ingredients at mixer.
4. Water filter: Use equipment that is equipped with an accurate water filter.
5. Cement Grout and Microfine Cement Grout Testing Apparatus: Provide necessary quality control testing apparatus at Work Site including, but not limited to, Marsh Funnel, flow cone apparatus, Baroid Mud Balance, sedimentation (bleed) test cylinders, scales, molds and curing equipment, and other devices that are required to conduct material acceptance tests, grout proportioning tests, and wet grout quality control tests for proper quality control of Work, and in accordance with cited standards.
6. Agitator/Holding Tank: Use a mechanically agitated holding tank that is of sufficient capacity to ensure an uninterrupted supply to grout pump.
7. Grout Pumps: Use grout pumps that are of satisfactory size and duty to deliver grout from holding tank to point of injection at a steady pressure without pulsation (e.g. Moyno type non-displacement pump).
8. Pressure Gages: Equip grouting plant with reliable pressures gages to measure pressure at point of injection, and separately at pump. Use ranges of pressure gages so that maximum pressure specified is approximately two-thirds of capacity of gage.
9. Gage Savers: Equip pressure gages with "gage savers" to prevent grout from entering gage.
10. Totalizing Meter: Provide a totalizing type meter that reads in liters to accurately measure and record volume of grout injected.
11. Calibrated Check Gage: Provide a calibrated check gage and store in a secure protective insulated box when not in use. Use calibrated check gage to check gages operating on grout plant daily. Do not grout without appropriate gages in place and in calibrated working order.
12. Grout Hoses: Use hoses for permeation grouting that have an inside diameter not less than 2-inches and that are capable of withstanding maximum water and grout pressures to be used. Use grout pipes in slurry walls larger than 2-inches to accommodate the grout hose.
13. Keep equipment, lines and hoses clean by constant circulation of grout and periodic flushing with water. Provide a return line to assist in grout circulation and to provide more precise grout pressure control.
14. Configure grouting equipment such that flushing can be accomplished with grout injection valve closed, with water supply valve open, and with grout pump running at full speed.
15. Stop valves: Provide suitable stop valves at collar of hole for use in maintaining pressure as required until grout has set.
16. By-pass valve: Provide a suitable by-pass valve to prevent sudden increases in grout pressure from developing at grout hole connection.
17. Communication Equipment: If out of visual contact, then provide and maintain adequate audible communication equipment to enable effective and immediate communication between mixing plant, pumping station and injection points.
18. Water Cement Ratio Control: Provide means for increasing and decreasing water-cement ratio as indicated by ground conditions, and if accepted by the Project Engineer.
19. ground-grout cores, including detrimental effects from water absorption into core.

#### Drilling Holes for Permeation Grout Pipes

- A. Drill grout holes to plan location, alignment, depth and verticality in accordance with the Drawings, approved Shop drawings and requirements specified herein.

- B. Lay out drill holes such that they are within  $\pm 3$ -inches of plan location.
- C. Measure and record verticality (and or deviation from specified inclination) and alignment (azimuth) of drill holes in 10 percent of drill holes at each area requiring treatment.
- D. Use rotary or percussion drilling equipment for grout hole drilling.
- E. Dry drilling will not be permitted.
- F. The use of rod-dope, grease or other lubricants will not be allowed on drill rods or in drill holes.
- G. Prevent grout holes from collapse and/or cave-in during and after drilling and before installation of grout pipes.
- H. Select means and methods of drilling that mitigate risk of dust generation at ground surface.
- I. At termination of drilling, flush each borehole clean and pressure test it with water to effectively clean hole and to determine volume and extent of leakage under continuous pressure up to required grouting injection pressure per accepted Work Plan. Measure rate of water acceptance at grouting pressure. Measure water injected into ground at constant pressure for a five (5) minute duration.
- J. Protect each drilled hole until it is grouted, with a cap, plug or other suitable means to prevent holes from becoming obstructed.

#### Permeation Grout Pipe Installation

- A. Sleeve port grout pipes may be installed inclined or vertically to obtain required minimum grout coverage shown on the Drawings, with a maximum of five (5) feet spacing between adjacent grout pipes unless otherwise accepted by the Project Engineer.
- B. Locate grout pipe within three (3) inches of location shown in Work Plan. Align grout pipe within two (2) percent of alignment shown in Work Plan.
- C. After being placed in a borehole, encase sleeve port grout pipes in a continuous mortar sheath.
- D. Maintain access to grout pipes for possible additional grouting until completion of excavation or until excavation removes part of entire grout pipe.
- E. After grouting, place protective caps on grout pipes.
- F. Coordinate spacing between grout holes with permeation grout setting time, flow rate, pumping volumes, existing ground conditions and possible drilling deviations such that a contiguous impermeable and stabilized ground-grout mass having desired engineering properties is ensured.
- G. Field adjustments to grout pipe locations, inclinations, and depths will be allowed to avoid obstructions such as utilities or foundations. Prepare sketches showing details of field modifications and submit to the Project Engineer for review.
- H. Clearly label drilling locations on-site in accordance with Contractor's numbering system adopted on Shop Drawings. Submit method of labeling grout pipes to the Project Engineer for review.

#### Chemical Grouting Procedures

- A. Grout Mixing Method:

1. Use continuous mixing method of injection for chemical grouting. Use proper amounts of chemical base material, water, reactant, and accelerator automatically proportioned and continuously supplied at proper flow rates and pressures.
2. Batch system of mixing grout will not be permitted.
3. Have base material and water-accelerator-catalyst solution pass through parallel separate hoses to a suitable baffling chamber near top of hole.
4. Place a sampling cock after baffling chamber to allow frequent gel time checks.
5. Place suitable check valves in grout lines at proper locations to prevent backflow.

B. Injection Procedures:

1. Using double packers, inject chemical grout into designated subsurface zones through grout pipes in sequence shown on reviewed and approved Shop Drawings.
2. Limit grouting pressure for any individual grout pipe or sleeve port to no more than 1-psi per foot of depth. Higher injection pressures may be permitted to crack open sleeve-ports, but these pressures will not be permitted for longer than one (1) minute.
3. Use injection pressures low enough to minimize penetration of grout into undesirable locations, to avoid fracturing ground, and to prevent damage to any existing structures.
4. Adjust injection procedures as needed to prevent surface or structure heave.
5. Determine maximum volume injected per sleeve port based on contributory volume of each sleeve port and ground porosity, however, inject no more than three (3) gallons per cubic foot of treated ground unless otherwise accepted by the Project Engineer.

C. Leakage Monitoring:

1. Closely monitor rate of grout take during grout injection for any indication of leakage of grout into undesirable locations or for resurgence of grout up grout pipe. If either condition is noted, then immediately stop grouting until an evaluation is made to prevent further leakage or resurgence.
2. Provide a direct telephone link or other suitable means of communication between grouting plant and injection point on-site.
3. Ascertain cause of sudden drops in grout injection pressure following initial start-up pressure adjustments. Periodically monitor areas adjacent to grouting site for grout leakage during injection.
4. In the event that serious grout leaks are observed, temporarily terminate injection and plug leaks before pumping is resumed. Inform the Project Engineer immediately of such grout injection pressure drops or serious leakage.
5. During injection, continuous checking of nearby grout pipes for leakage into pipes is required to allow immediate removal of chemical grout that may block pipe. If grout pipe is blocked/plugged by hardened grout, then drill inside grout pipe using a rotary tool in order to clean it for future injection. Should grout pipe be determined to be unusable for future injection, install one (1) or more replacement grout pipes.

D. Gel Times:

1. Verify theoretical gel times submitted in Work Plan by performing sample gel tests before injection using planned mix ratios and available water at prevailing ground temperatures.
2. During injection, obtain samples for gel time checks at least once every half-hour of pumping.
3. Have gel samples properly labeled and stored in sealed containers to prevent moisture adsorption until completion of Work.

E. Control of Ground Heave:

1. Take special care to minimize ground heave, when grouting directly beneath or adjacent to utilities, foundations, walls and other structures.

2. Monitor ground heave.
3. If and when ground movement reaches alert level immediately stop grout injection and submit proposal on how to proceed, preventing additional movement, for review by the Project Engineer.
4. Immediately notify the Project Engineer of initial movement of any monitoring point.

F. Control of Waste Grout and Spillage:

1. Locate equipment for mixing, holding, and pumping chemical grout in a secure location and operate to minimize spillage of material.
2. Do not allow chemical grout, or component materials of grout mix to enter storm drains, signal troughs, conduits, manholes or other facilities.
3. In the event of spillage of chemical grout component materials, immediately implement cleanup procedures in accordance with manufacturer's SDS.
4. Backfilling of Lost, damaged or Plugged Grout Pipes: Backfill with cement grout from bottom-up using a tremie pipe any chemical grout pipe lost, damaged or plugged because of mechanical failure of equipment, lack of protection, inadequacy of grout supplies, or improper drilling, grout mixing, or injection procedures. Replace with another grout pipe.

Cement and Microfine Cement Grouting Procedures

A. Grout Mixing Method:

1. Use continuous mixing method of injection for cement and microfine cement permeation grouting. Use proper amounts of cement or microfine cement, water, and admixtures adequately proportioned and continuously supplied at proper flow rates and pressures.
2. The batch system of mixing grout will not be permitted.
3. Place suitable check valves in grout lines at proper locations to prevent backflow.

B. Injection Procedures:

1. Using double packers, inject cement grout or microfine cement grout into designated subsurface zones through grout pipes in sequence shown on reviewed and approved Shop Drawings.
2. Limit grouting pressure for any individual grout pipe or sleeve port to no more than 1-psi per foot of depth. Higher injection pressures may be permitted to crack open sleeve-ports, but these pressures will not be permitted for longer than one minute.
3. Use injection pressures low enough to minimize penetration of grout into undesirable locations, to avoid fracturing ground, and to prevent damage to any existing structures.
4. Adjust injection procedures as needed to prevent surface or structure heave.
5. Determine maximum volume injected per sleeve port based on contributory volume of each sleeve port and ground porosity, however, inject no more than three (3) gallons per cubic foot of treated ground unless otherwise accepted by the Project Engineer.

C. Leakage Monitoring:

1. Closely monitor rate of grout take during grout injection for any indication of leakage of grout into undesirable locations or for resurgence of grout up grout pipe. If either condition is noted, then immediately stop grouting until an evaluation is made to prevent further leakage or resurgence.
2. Provide a direct telephone link or other suitable means of communication between grouting plant and injection point on-site.
3. Ascertain cause of sudden drops in grout injection pressure following initial start-up pressure adjustments. Periodically monitor areas adjacent to grouting site for grout leakage during injection.

4. In the event that serious grout leaks are observed, temporarily terminate injection and plug leaks before pumping is resumed. Inform the Project Engineer immediately of such grout injection pressure drops or serious leakage.
  5. During injection, continuous checking of nearby grout pipes for leakage into pipes is required to allow immediate removal of chemical grout that may block pipe. If grout pipe is blocked/plugged by hardened grout, then drill inside grout pipe using a rotary tool in order to clean it for future injection. Should grout pipe be determined to be unusable for future injection, install one (1) or more replacement grout pipes.
- D. Wet Grout Testing: Verify wet grout properties against Work Plan requirements for sedimentation (bleed), efflux time or Marsh Funnel viscosity, setting time and specific gravity at least once per shift per grout plant in operation.
- E. Control of Ground Heave:
1. Take special care to minimize ground heave, when grouting directly beneath or adjacent to utilities, foundations, walls and other structures.
  2. Monitor ground heave.
  3. If and when ground movement reaches alert level immediately stop grout injection and submit proposal on how to proceed, preventing additional movement, for review by the Project Engineer.
  4. Immediately notify the Project Engineer of initial movement of any monitoring point.
- F. Control of Waste Grout and Spillage:
1. Locate equipment for mixing, holding, and pumping grout in a secure location and operate to minimize spillage of material.
  2. Do not allow grout, or component materials of grout mix to enter storm drains, signal troughs, conduits, manholes or other facilities.
- G. Backfilling of Lost, Damaged or Plugged Grout Pipes: Backfill with cement grout from bottom-up using a tremie pipe any grout pipe lost, damaged or plugged because of mechanical failure of equipment, lack of protection, inadequacy of grout supplies, or improper drilling, grout mixing, or injection procedures. Replace with another grout pipe.

#### Cleanup

Remove and dispose of waste grout, debris, and surplus materials at completion of each Work shift at a suitable disposal area in accordance with Federal, State, and local environmental laws and regulations.

Immediately after completion of exploratory limits remove materials and equipment, replace any ballast contaminated with grout materials, and restore work area to original condition, to acceptance of the Project Engineer.

#### Post-Permeation Grouting Exploration

Explore permeation grouted production zones after completion of chemical grouting to evaluate continuity of soil-grout mass, and to obtain ground-grout mass samples for laboratory testing of unconfined compressive strength.

#### Measurement and Payment

Permeation grout will be measured for payment by the cubic foot of grout injected and accepted as specified herein. Incidental work including wasted grout, drilling and patching of probe holes and grout holes, and cleanup will not be measured separately for payment. Incidental work shall be included in the unit price for injecting grout.

#### 2.2.38 PLACE SALVAGED DUMPED RIVER ROCK

This item consists of placing salvaged river rock in the excavated channel in accordance with the plans, details, and section 210 of the MAG Std Specifications.

Payment will be made at the contract unit price bid per cubic yard, to the nearest yard, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to place the dumped river rock as described or specified in the contract documents.

#### 2.2.39 GABION MATTRESS AND BASKETS

This work shall consist of furnishing, assembling, and filling woven wire mesh gabions with rock as specified in the contract to the dimensions, lines and grades shown on the plans. The term “gabion” refers to both gabion baskets and gabion mattresses in this section.

#### Materials

- Woven Wire Mesh  
Wire (Zinc Coated)

All tests on the wire must be performed prior to manufacturing the mesh.

- Tensile strength: both the wire used for the manufacture of gabions and the lacing wire, shall have a maximum tensile strength of 75,000 psi (515 MPa), in accordance with ASTM A641/A641M.
- Elongation: the test must be carried out on a sample at least 12 in. (30 cm) long. Elongation shall not be less than 12%, in accordance with ASTM A370.
- Zinc coating: minimum quantities of zinc according to ASTM A641/A641M, Class III soft temper coating.
- Adhesion of zinc coating: the adhesion of the zinc coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers, in accordance with ASTM A641/A641M.

#### Galvanized (zinc coated) woven wire mesh gabions (8 x 10 mesh type):

- Wire mesh: Diameter - 0.120 in. (3.05 mm)
- Selvedge wire: Diameter - 0.153 in. (3.90 mm)
- Mesh opening: Nominal Dimension D = 3.25 in. (83 mm)

#### Galvanized (zinc coated) lacing wire and internal stiffeners:

- Lacing wire: Diameter - 0.087 in. (2.20 mm)
- Cross tie/stiffener wire: Diameter - 0.087 in. (2.20 mm)
- Preformed Stiffener: Diameter – 0.153 in. (3.9 mm) internal.

#### Steel Mesh Properties

- Mesh Tensile Strength shall have a minimum strength of 3500 lb/ft (51.1 kN/m) when tested in accordance with ASTM A975 section 13.1.1
- Punch Test Resistance shall have a minimum resistance of 6000 lb (26.7 kN) when tested in accordance with ASTM A975 section 13.1.4  
Connection to selvedges shall have a minimum resistance of 1400 lb/ft (20.4 kN/m) when tested in accordance with ASTM A975.

#### Spenax Fasteners (Overlapping Fasteners):

Overlapping fasteners may be used in lieu of, or to complement, lacing wire for basket assembly and installation.

High tensile fasteners shall have a nominal spacing of 4 in. (100 mm) not to exceed 6 in (150 mm) for all assembly and installation. This is based on a 1,400 lb/ft (20.4 kN/m) pull apart resistance for galvanized mesh with this spacing (ASTM A975 section 13.1.2).

Fasteners used for assembly and installation of the units on the field shall be tested for compliance with the ASTM A975 section 13.1.2.2 Pull-Apart Resistance. Producer or supplier of the wire mesh shall provide certification no later than 15 days prior of starting construction.

When tested in accordance with section 13.1.2.1, the average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.

Galvanized Fasteners: Diameter = 0.120 in. (3.05 mm), according to ASTM A764, Type B, Class 3.

Tensile strength: 230,000 to 273,000 psi (1586-1882 MPa) in accordance with ASTM A764 Table 2.

Proper installation of rings: A properly formed Spenax fastener shall have a nominal overlap of one (1) in. after closure.

Anchorage to concrete: Epoxy adhesive, galvanized eyebolts or J hook bolts, and galvanized steel bar per Manufacturer's recommendations.

#### Tolerances

Wire: Zinc coating, in accordance with ASTM A641/A641M, Class III soft temper coating.

Gabion sizes:  $\pm 5\%$  on the length, width, and height.

Mesh opening: Tolerances on the hexagonal, double twisted wire mesh opening shall not exceed  $\pm 10\%$  on the nominal dimension (3.25" for a mesh type of 8x10).

#### Standard Unit Size

Table of sizes for gabions			
L=Length ft (m)	W=Width ft (m)	H=Height ft (m)	# of cells
6 (1.8)	3 (0.9)	3 (0.9)	2
9 (2.7)	3 (0.9)	3 (0.9)	3
12 (3.6)	3 (0.9)	3 (0.9)	4
6 (1.8)	3 (0.9)	1.5 (0.45)	2
9 (2.7)	3 (0.9)	1.5 (0.45)	3
12 (3.6)	3 (0.9)	1.5 (0.45)	4
6 (1.8)	3 (0.9)	1 (0.3)	2
9 (2.7)	3 (0.9)	1 (0.3)	3
12 (3.6)	3 (0.9)	1 (0.3)	4
4.5 (1.4)	3 (0.9)	3 (0.9)	1

All sizes and dimensions are nominal. Tolerances of  $\pm 5\%$  of the width, length, and height of the gabions shall be permitted.

- Fabrication

Gabions shall be manufactured and shipped with all components mechanically connected at the production facility. The front, base, back and lid of the gabions shall be woven into a single unit. The ends and diaphragm(s) shall be factory connected to the base. All perimeter edges of the mesh forming the basket and top, or lid, shall be selvaged with wire having a larger diameter.

The gabion is divided into cells by means of diaphragms positioned at approximately 3 ft (1 m) centers. The diaphragms shall be secured in position to the base so that no additional lacing is necessary at the jobsite.

- Rock

The rock for gabions shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure. Gabion rocks shall range between 4 in. (0.10 m) and 8 in. (0.20 m). The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the gabion exposed surface. The size shall be such that a minimum of two layers of rock must be achieved when filling the gabions. Salvage rock from removed gabion mattresses and from channel excavation if it meets these requirements.

### Construction Requirements

- Assembly

Gabions are supplied folded flat and packed in bundles. The units are assembled individually by erecting the sides, ends, and diaphragms, ensuring that all panels are in the correct position, and the tops of all sides are aligned. The four corners shall be connected first, followed by the internal diaphragms to the outside walls. All connections should use lacing wire or fasteners as previously described in Section 2.2.37.1.

The procedure for using lacing wire consists of cutting a sufficient length of wire, and first looping and/or twisting to secure the lacing wire to the wire mesh. Proceed to lace with alternating double and single loops through every mesh opening approximately every 6 in. (150 mm) pulling each loop tight and finally securing the end of the lacing wire to the wire mesh by looping and/or twisting.

The use of fasteners shall be in accordance with the manufacturer's recommendations as specified in Section 2.2.37.1.

- Installation

After assembly, the gabion baskets are carried to their final position and are securely joined together along the vertical and top edges of their contact surfaces using the same connecting procedure(s) described in the Assembly portion of this section. Whenever a structure requires more than one layer, the upper empty baskets shall also be connected to the top of the lower layer along the front and back edges of the contact surface using the same connecting procedure(s) described in the Assembly portion of this section.

- Filling

Baskets shall be filled with rock as specified in the Rock portion of Section 2.2.37.1. During the filling operation some manual stone placement is required to minimize voids. It is also recommended to slightly overfill the baskets by 1 to 2 in. (25 to 50 mm) to allow for settlement of the rock. The exposed faces of vertical structures may be carefully hand placed to give a neat, flat, and compact appearance.

The cells shall be filled in stages so that local deformation may be avoided. That is, at no time shall any cell be filled to a depth exceeding 1-foot (0.30 m) higher than the adjoining cell. Behind gabion walls, compact the backfill material simultaneously to the same level as the filled gabions.

### Method of Measurement



- The payment quantities for excavation shall be determined by the outside limits of the gabion structure. Quantities will be determined from cross sections and the linear distance and paid for under the appropriate excavation bid items.
- The quantity to be paid for "In place gabions" shall be the number of cubic yards of gabions measured in their final position. Project conditions and material availability will determine the actual size of gabions to be used.
- Excavated material beyond the limits of the gabions shall be backfilled with gravel, crushed rock or other material approved by the engineer.
- This bid price shall include the installed in place cost of all materials, equipment, and labor, including gabions, rock, and backfill material.

#### Basis of Payment

Accepted gabions will be paid for at the unit price for each pay item included in the contract.

#### 2.2.40 LANDSCAPING

Plant materials: plant materials shall be quality material having the habit of growth which is normal for the species; sound, vigorous, healthy, free from weeds and insects, plant diseases and injury. Can, ball and height and spread dimensions shall be measured according to accepted standards on the Arizona nursery association and good practice.

Topsoil: topsoil shall be screened, fertile, friable soil from well drained arable land and free from nut grass, refuse, roots, heavy clay, noxious weeds or any material toxic to plant growth. Topsoil content shall be as follows: silt 20-45%; clay 15-20%; sand 30-60%; with a minimum of 5% organic material (natural or added). Topsoil existing on the site may be used if it meets the above specification. Ph shall not be lower than 5.5 nor exceed 8.3 and soluble salts shall not exceed 1500 ppm.

Soil preparation: planting pit backfill for all trees and shrubs shall be as follows: two parts excavated soil thoroughly mixed with one part nitrolized wood mulch; one pound of gypsum and four ounces of soil sulphur per tree or one-half pound of gypsum and two ounces of soil sulphur per shrub.

All trees and shrubs shall receive agriform 21 (20-10-5) plant tabs at the rates noted on the plans. Set tablets 6" below finished grade and space evenly around plant's perimeter.

Weed control: non-selective contact herbicide(s), non-selective systemic herbicide(s), or pre-emergent herbicide(s) shall not be permitted within environmentally sensitive areas. Manual weed removal methods are permitted for use within environmentally sensitive areas.

Decomposed granite: decomposed granite shall be of the size and color indicated on plans, shall be free from lumps or balls of clay and shall not contain calcareous coating, caliche, organic matter or deleterious substances. Color and source of decomposed granite shall be as per the plans. All material shall be from a single production source and shall present a uniform appearance. Material containing clumps which will not disintegrate with a shovel blow shall be rejected.

No material or method shall affect the landscape planting and establishment. Materials and methods must conform to federal, state and local regulations.

Tree stakes: tree stakes shall be 2" diameter x 8' new lodge pole pine or approved equal single or double stake. See plant legend remarks and details.

Tree guys: tree guys shall be as shown on the plans.

Nitrolized wood mulch: nitrolized wood mulch shall consist of a ground or processed wood product derived from redwood, ground or shredded fir, redwood or ponderosa bark. It shall have a nitrogen content of 1%. See soil preparation materials, planting backfill material and plan notes.

## EXECUTION

Planting operations: plants not dimensioned as to precise locations shall be scaled from the plans and the plant placed in the appropriate relationship indicated.

Weed control: the applicator of all weed control materials shall be licensed by the state of Arizona as a pest control operator and a pest control advisor in addition to holding any subcontractor licenses that are required.

Grading: bring all planting areas to finish grade after soil prepping which shall be per the depths shown on plans and details below the adjacent paving and curbs or as noted by spot elevations. Special attention shall be given to maintaining continuous and even flow lines. Drainage away from structures and providing positive drainage to inlets and from outlets.

Grades shall be established to drain all water away from structures and behind walls. When drainage is difficult to achieve, notify the landscape architect and request a solution before continuing. Grades in shrub areas shall be established prior to planting to insure proper final planting heights. Final grading shall include the knocking down of watering basins prior to planting of ground cover. On hillside planting water basins shall be retained.

Decomposed granite: prior to placing, the area shall be totally free of weeds, using manual weed control if necessary. Decomposed granite shall be at the depth shown on the plans and evenly distributed at the designated areas.

After placing and grading; lightly water to remove fine material from the surface and water settle to an extent satisfactory to the City or its authorized representative. Remove weeds with approved methods a second time between 2 and 4 weeks after installation or prior to the start of the maintenance period, whichever comes first.

Clean-up: remove promptly any soil, mulch or other material dropped into paved areas by hauling operations or otherwise, keeping these areas clean at all times. Upon completion of planting, remove all excess soil, stones and debris.

Start of maintenance period: when all landscape improvements have been installed in accordance with the plans and specifications, the contractor shall notify the City or its authorized representative and request a "start of maintenance" inspection. If the City or its authorized representative determines the work to be substantially complete and in conformance with the plans and specifications, the contractor will be advised in writing that the maintenance period is started.

Measurement and payment for this item shall be by Lump Sum complete in place.

### 2.2.41 IRRIGATION

This work will be paid on a lump sum basis and consists of:

General: materials throughout the system shall be as shown on the drawings and shall be new.

Protect work and materials from damage during construction and storage. Protect polyvinyl chloride (PVC) pipe and related fittings from direct sunlight. Beds on which pipe is stored must be full length of pipe. Do not use any pipe or fitting that has been damaged or dented.

Plastic pipe: plastic pipe furnished shall be polyvinyl chloride plastic pipe conforming to the requirements of ASTM d2241 for SDR-PR pipe PVC 1120 or PVC 1220. Plastic pipe shall be SDR 21 or heavier.

Mainline fittings: PVC fittings shall be schedule 40, polyvinyl chloride.

Lateral fittings: PVC fittings shall be schedule 40, polyvinyl chloride.

Copper pipe and fittings: copper pipe shall be type 'k'. Copper fittings wrot schedule 40 standard weight.

Control wire: solid copper wire, ul approved for direct burial in ground. Minimum gauge #14. For common wire and #14 for wire to valve from controller.

Splicing materials: 3-m dby-6 connector. As specified on plans.

Automatic valves: automatic valves shall be specified on plans.

Manual valves: manual valves shall be as specified on plans.

Plastic valve box and locking cover: valve boxes and locking covers shall be specified on plans.

Emitters: emitters shall be as specified on plans.

## EXECUTION

Layout: contractor shall install all irrigation equipment as shown on plans. Where connections to stubouts are required, make necessary adjustments to layout as necessary to install around existing work. Contractor shall guarantee full coverage upon completion of job.

Excavating and trenching: perform all excavations as required for installation of work including shoring of earth banks. Trenching depths, widths, and backfill shall be as shown on the plans.

This site shall be Arizona 811 staked prior to any construction. Should utilities not shown on the plans be found during excavations, contractor shall promptly notify City or its authorized representative for instructions as to further action. Failure to do so will make contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities.

Grades: before starting work, check all grades from known elev. (see landscape construction or civil plans) to be sure that rough grades are properly established and that all pipeline will be at the proper grade or lower upon the completion of final grading.

Sleeving: conduits for control wire and sleeves for irrigation piping shall be installed by the contractor. Sleeving to extend 12" beyond edge of concrete or pavement.

Pipeline assembly: solvent weld PVC pipe and fittings using solvents and methods recommended by manufacturer, except where threaded connections are required. Clean pipe and fittings of dirt and moisture before reassembly. PVC pipe may be assembled on ground surface beside trench. Make all connections between PVC pipe and metal valves or pipe threaded fittings using sch.80 toe nipples.

Irrigation control valves: install control valves in valve boxes where shown on plans and group boxes together where practical. Place no closer than 12" from walk edges and median curb. Top of valve boxes shall be 1" above finish grade. One valve maximum per valve box.

Control wiring: install control wires with mainline in common trenches whenever possible. Lay to side and below pipeline. Provide looped slack at valves and tape wires in bundles in 10' intervals. Control wire splices will be allowed only in controller or valve boxes. Crimp wires together and seal connections with specified splicing materials.

Closing of pipe and flushing of lines: cap all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

Potable water shall be provided to thoroughly flush out all water lines before installing valves and other hydrants.

Inspections and test: submit request for inspections to City or its authorized representative at least 72 hours prior to anticipated inspection.

Inspection of completed installation will be made by the landscape architect prior to backfilling of trenches.

Make hydrostatic tests when welded PVC joints have cured at least 24 hours. Apply continuous available static water pressure as follows:

1. All piping on the non-pressure side of control valves shall pass a visual inspection before backfilling.
2. All piping on the pressure side of control valves shall be tested for 2 hours at 120 psi minimum without loss of pressure. Leaks resulting from tests shall be repaired and tests repeated until system passes test. Pressure testing shall be from a portable water source and pump with potable water.

Backfilling and compacting: after system is operating and required tests and inspections have been made, backfill excavation and trenches with clean soil, free of debris and rocks.

Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to 95% minimum density under payments, 85% under planted areas.

Compact all trenches by thoroughly flooding during and after backfill operation. Jetting process may be used in those areas. Dress off all areas to finish grade. Notify landscape architect for final coverage inspection prior to final acceptance.

Clean up: keep all areas of work clean and orderly at all times. Keep paved areas clean during installation. All debris shall be removed from the entire project prior to final acceptance.

Final irrigation acceptance: work under this section will be accepted by City or its authorized representative upon satisfactory completion of all work. No planting shall begin before all irrigation is complete and 100% functional.

Warranty/guarantee: in addition to manufacturer's guarantees or warranties, all work shall be warranted/guaranteed as provided in the landscape specifications against defects in material, equipment and workmanship by the contractor. Warranty shall also cover repairs to any part of the premises resulting from leaks or other defects in materials. Submit a written warranty letter to the City or its authorized representative.

Measurement and payment for this item shall be by Lump Sum complete in place.

#### 2.2.42 TLAQUEPAQUE PROPERTY SYCAMORE TREE PROTECTION

The work under this item shall consist of the protection of the Tlaquepaque property's sycamore trees during path, property wall and arch sign removal and construction. Means and methods to be coordinated with the City and Tlaquepaque property owner prior to construction in the specified area. The Contractor shall hire a Certified Arborist to assist in developing a working plan around the Sycamore trees to minimize disturbance and ensure tree survival. The contractor shall employ the same Arborist to provide over site and monitoring of the work plan in the vicinity of the existing Sycamore trees.

The work zone shall be defined prior to Construction. Sycamore tree and root ball protection shall be ensured for the trees located at the North East corner of the east Tlaquepaque parking lot near Sta 11+20 and Sta 11+67.

During construction activities necessary infrastructure for tree health management procedures shall be set up, including but not limited to protection to the tree trucks, branches, root zone soil and roots, including but not limited to heavy mulch layers placed on top of root beds, trucks wrapped with protective layer heavy

wood staves or corrugated plastic pipe. Heavy equipment will not be allowed for excavation near trees and any excavation shall require clean cutting and sealing of roots to avoid rot.

Measurement and payment for this item shall be paid for Lump Sum and shall include all labor and materials required to protect the sycamore trees.

#### 2.2.43 CONCRETE BARRIER

The work under this item will consist of the construction of the decorative concrete barrier. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, finish, falsework and formwork to be included in the contract unit price.

#### 2.2.44 CONCRETE BARRIER WITH HANDRAIL

The work under this item will consist of the construction of the decorative concrete barrier. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis. Handrail and attachments shall be per Section 520 of the MAG Standard Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, handrail, handrail attachments, finish, falsework and formwork to be included in the contract unit price.

#### 2.2.45 DECORATIVE RAILING

The work under this item shall include furnishing all labor, equipment and materials necessary to construct the decorative railing at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans and the requirements of MAG Standard Specifications unless noted otherwise.

All materials shall be in accordance with the details in the project plans. The decorative railing shall be in accordance with A53, Grade A and shall be galvanized after fabrication in accordance with A123 and shall also be painted. Prior to painting, the galvanization shall be etched. The decorative railing shall be painted in accordance with the color scheme noted in the project plans. The color of the paint shall be submitted to the Engineer for approval. Painting shall conform to Section 530 of the MAG Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. Item shall be measured horizontally along the top of the rail.

#### 2.2.46 DECORATIVE RAILING WITH HANDRAIL

The work under this item shall include furnishing all labor, equipment and materials necessary to construct the decorative railing at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans and the requirements of MAG Standard Specifications unless noted otherwise. Handrail and attachments shall be per Section 520 of the MAG Standard Specifications.

All materials shall be in accordance with the details in the project plans. The decorative railing shall be in accordance with A53, Grade A and shall be galvanized after fabrication in accordance with A123 and shall also be painted. Prior to painting, the galvanization shall be etched. The decorative railing shall be painted in accordance with the color scheme noted in the project plans. The color of the paint shall be submitted to the Engineer for approval. Painting shall conform to Section 530 of the MAG Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of handrail and associated attachments shall be included in the contract unit price. Item shall be measured horizontally along the top of the rail.

#### 2.2.47 HANDRAIL (WALL ATTACHMENT)

The work under this item shall consist of constructing the metal handrails along the backwall and sidewalls of the existing SR 179 Bridge. All work shall be in accordance with the project plans and the requirements of Section 520 of the MAG Specifications.

All materials shall be in accordance with the details shown on the project plans. The metal handrail shall be galvanized after fabrication in accordance with ASTM A123 and shall also be painted. Prior to painting, the galvanization shall be etched. Paint color shall be color chip No. 20059 from Federal Standard 595B. Rail shall be 1.5" Schedule 40 steel pipe ASTM A 53, Grade B. Rail shall be painted Sedona Red. All sharp edges shall be removed.

Measurement and payment for this item shall be by linear foot, complete in place. The cost of galvanization, painting, attachment to existing wall to be included in the contract unit price.

#### 2.2.48 TRASH RECEPTACLE

The work shall consist of providing the Trash Receptacle and associated concrete pad, complete as shown and detailed on the plans.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work as described or specified in the contract documents. Receptacle and Lid color to be Standard Dumor color 'Almond'.

#### 2.2.49 SIGN POST (PERFORATED) (2 S)

#### 2.2.50 SIGN POST (PERFORATED) (2 1/2 S)

#### 2.2.51 FOUNDATION FOR SIGN POST (CONCRETE)

#### 2.2.52 WARNING, MARKER, OR REGULATORY SIGN PANEL

#### 2.2.53 FLAT SHEET ALUMINUM SIGN PANEL

#### 2.2.54 WATERBORNE-TYPE I PAVEMENT MARKING(PAININTING)(YELLOW)

Single and telescoping perforated posts shall be square tube fabricated from galvanized sheet steel. The sheet steel shall have a thickness of 0.105 inches (12 gauge) or 0.135 inches (10 gauge) as required by the project specifications. Sheet steel shall conform to the requirements of ASTM A653 for either SQ Grade 40 or SQ Grade 50 Class 1, and be galvanized in accordance with the requirements of Coating Designation G-90. The posts shall have a wall thickness, including coating, of 0.097 to 0.116 inches for 12 gauge and 0.127 to 0.146 inches for 10 gauge. Posts shall be welded directly in the corner by high frequency resistance welding or equal. The outside edges of the posts shall be scarfed as necessary to produce a standard corner radii of  $5/32 \pm 1/32$  inch. External welded surfaces and scarfed areas shall be re-galvanized after fabrication. When specified on the plans, holes  $7/16 \pm 1/64$  inch in diameter shall be provided on 1-inch centers along all four sides over the entire length of the post. The holes shall be laterally centered on the longitudinal centerline of each face. Hole positioning and spacing shall be the same on all four faces, such that the hole centerlines for each group of four holes shall pass through a common point on the longitudinal centerline of the tube. For telescoping posts, holes shall be in proper alignment to allow 3/8-inch diameter bolts to pass through the entire post. The finished posts shall be straight and have a smooth, uniform finish. All consecutive sizes of posts shall be freely telescoping for not less than 10 feet of their length without the necessity of matching any particular face to any other face.

Bolts shall conform to the requirements of SAE Specification J429, Grade 5, or ASTM A449, Type 1. Nuts shall conform to the requirements of ASTM A563, Grade A. Washers shall conform to the requirements of ASTM F844. Bolts, nuts, and washers shall be zinc coated in accordance with the requirements of ASTM B633 or cadmium plated in accordance with the requirements of ASTM B766.

Perforated sign post lengths shall be determined by the contractor at the time of construction staking. Posts shall be cut to the proper lengths in the field. Splicing will be permitted for single perforated posts; however, splices will be limited to one per each post installation and the splicing shall be accomplished in

accordance with the details shown on the plans. The minimum length of any spliced piece of post shall be 2 feet.

Sign panels shall be flat sheet aluminum with direct-applied, digitally-imaged, electronic-cut, or screen-printed characters. Shipment, storage, and handling of sign panels shall conform to the recommendations of the manufacturers of the sign panel components. Fabricated signs and overlay sheets shall be shipped on edge. Damage to the sign panel or legend resulting from banding, crating, or stacking may be cause for rejection of the signs. Signs shall be fabricated in accordance with the recommendations established by the manufacturer of the sign sheeting. All processes and materials used to make a sign shall in no way impact the performance, uniform appearance (day and night), or durability of the sheeting, or invalidate the sign sheeting manufacturers' warranty. All sheeting used for background and legend shall be from the same manufacturer. Sign panels shall not be overlaid. All text and numerals shall all be installed at the same orientation: either zero degrees or 90 degrees. Design of letters and numbers shall be in accordance with the project plans with a tolerance of  $\pm 1/16$  of an inch. The contractor shall not paint the bolts or the washers unless otherwise specified.

Panels shall be fabricated from 0.125-inch thick 5052-H36, or 5052-H38 Aluminum Alloy conforming to the requirements of ASTM B209. Panel facing shall be prepared and covered with retroreflective sheeting in accordance with the recommendations of the sheeting manufacturer. The color of the sheeting shall be as specified on the plans. All surfaces not covered shall be etched to reduce glare from reflected sunlight. Splicing of retroreflective sheeting shall not be allowed on sign panels having a minimum dimension up to and including 4 feet. Messages shall be reflectorized white or, if called for on the plans, opaque black, and shall be produced by either screen printing, direct-applying, digital imaging, or electronic cutting.

Screen-printed letters, numerals, arrows, symbols, and borders, shall be applied on the retroreflective sheeting background of the sign by direct or reverse screen process. Messages and borders of a color darker than the background shall be applied to the retroreflective sheeting by direct process. Messages and borders of a color lighter than the sign background shall be produced by the reverse screen process. Opaque or transparent colors, inks, and paints used in the screen process shall be of the type and quality recommended by the manufacturer of the retroreflective sheeting. The screening shall be performed in a manner that results in a uniform color and tone, with sharply defined edges of legends and borders and without blemishes on the sign background that will affect intended use. Signs, after screening, shall be air dried or baked in accordance with the manufacturer's recommendations to provide a smooth hard finish. Any signs on which blisters appear during the drying process will be rejected. Direct-applied letters, numerals, symbols, borders, and other features of the sign message shall be cut from black opaque or retroreflective sheeting of the color specified and applied to the retroreflective sheeting of the sign background in accordance with the instructions of the manufacturer of the retroreflective sheeting. Direct-applied legend may be moved vertically 1/2 inch to avoid placing only a small amount of material over the adjacent extruded panel. The bottom of all characters for a line of legend shall line up within 1/8 of an inch. Electronic-cut characters shall be cut from translucent acrylic sheeting using computerized automated cutting processes. Digitally-imaged characters shall consist of characters produced through ultraviolet jet-printing or thermal transfer. Signs with digitally-imaged characters shall be manufactured using matched component ink, transparent electronic-cuttable film, and/or overlay film as supplied by the reflective sheeting manufacturer. For digitally-imaged copy on white sheeting, the coefficient of retroreflection shall be not less than 70 percent of the original values for the corresponding integral color. When characters are spread over two adjacent extruded panels, the characters shall align with each other within 1/16 of an inch.

Panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication. Fabricated signs shall be stored indoors and kept dry during storage. If packaged signs become wet, all packaging material shall be removed immediately and the signs allowed to dry. The signs may be repackaged using new dry materials. If outdoor storage is necessary, all packaging materials shall be removed. Signs shall be stored on edge, above ground, in an area where dirt and water will not contact the sign face. Materials used to support stored signs shall not contact sign faces. During fabrication of the sign panels, the contractor shall ensure the bolt holes on each sign panel are placed so the holes will not coincide with any legend and any bolts, washers, or other hardware used

will not cover any portion of the legend. If the bolt holes on a sign panel do not comply with these requirements, the Engineer may reject the sign panel or accept the sign panel and require the contractor to paint the bolts, washers, and any hardware coinciding with the sign legend to match the color of the legend.

Minor scratches and abrasions resulting from fabrication, shipping and installation of panels may be patched; however, patching shall be limited to one patch per 50 square feet of sign area with the total patched area being less than 5 percent of the sign area. Panels requiring more patching than the specified limit will be rejected. Patches shall be edge sealed by a method approved by the retroreflective sheeting manufacturer. Sign panels shall be attached to the posts with hex head bolts as shown in the Standard Drawings; slotted head bolts shall not be used. A cadmium-plated or zinc-plated fender washer shall be placed between the bolt head and panel face. Bolts shall be fastened with a cadmium-plated or zinc-plated fender washer and two standard nuts. Nylon washers shall not be used. The fender washer shall be placed against the sign post, the first nut shall be tightened against the fender washer, and the second nut shall be tightened against the first nut. Bolts shall be tightened from the back by holding the bolt head stationary on the face of the panel. Twisting of the bolt head on the panel face will not be allowed.

Sign panel sheeting shall conform to criteria listed in the most current version of ASTM D4956 for the applicable type and class, unless otherwise specified. Sheeting for permanent warning signs and regulatory signs, including all sign legends and borders, shall be ASTM Type XI. Sheeting for all warning signs with yellow backgrounds shall be Type XI fluorescent retroreflective yellow. Sheeting for information signs, ground-mounted guide signs, and marker signs, including all sign legends and borders, shall be ASTM Type IX or XI. When more than one sheeting type is allowed, the contractor may use any of the types listed, provided that materials used for a particular application shall be of the same ASTM type, manufacturer, and product for all signs of the same type in the project. Opaque films used with sheeting shall be acrylic type films. Direct-applied and demountable black characters shall be non-reflective.

Standard colors specified for sheeting, processing inks, and films shall, as applicable, match visually and be within the color tolerance limits required by Highway Tolerance Charts issued by the Federal Highway Administration. Additionally, for the retroreflective sheeting, unless otherwise noted, the Luminance Factor (Daytime Luminance) and Color Specification Limits (Daytime) shall conform to the applicable requirements of ASTM D4956. In addition to the luminance and color requirements, fluorescent orange sheeting and fluorescent yellow sheeting shall have the capacity to effectively fluoresce outdoors under low light conditions. For all applications requiring fluorescent orange sheeting or fluorescent yellow sheeting, the contractor shall provide a letter to the Engineer from the manufacturer certifying that the sheeting to be used is fluorescent.

The coefficient of retroreflection shall meet the minimum requirements of ASTM D4956 for the type of retroreflective sheeting specified. All black opaque films shall have a maximum coefficient of retroreflection of 1.0 or less at an observation angle of 0.2 degrees and entrance angle of -4.0 degrees. Transparent and opaque inks used for post or pre-screen printing of signs shall be of a type and quality specified by the sheeting manufacturer, and shall conform to the applicable requirements of the MUTCD and the Federal Highway Administration for traffic signs. The inks shall be applied in a manner, and with equipment, that is consistent with the ink manufacturer's recommendations. Additionally, the signs produced shall have a uniform legend of consistent stroke width and sharply defined edges, without blemishes that would negatively impact appearance, color or required retroreflectivity. Reflective sheeting and film adhesives shall be Class I as specified in ASTM D4956 and as modified herein. Pressure sensitive adhesive shall be an aggressive tack type that requires no heat, solvent or other pre-application preparation of the sheeting or film for its adhesion to clean aluminum, plywood, or reflective sheeting surfaces. Pretreatment of plastic surfaces shall be done as recommended by the sheeting manufacturer. The adhesive shall form a tight weatherproof durable bond that shall endure under all weather conditions for the required time of durability for that material. During this period the material shall remain bonded to its surface without discoloration, cracking, crazing, peeling, blistering, dimensional change or alignment change. The sheeting, inks, clear coats (if required), and films shall be applied as specified by the



manufacturer. The applied sheeting or film shall not have bubbles, wrinkles or foreign materials beneath the reflective sheeting, ink or film.

The work under this section shall consist of cleaning and preparing the pavement surface, furnishing all materials and applying white or yellow, water-borne, lead-free, rapid-dry traffic paint and reflective glass beads at the locations and in accordance with the details shown on the plans, MUTCD or as directed by the Engineer.

All material used in the formulation of the pavement marking paint shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted for each lot or batch of paint prior to its use.

#### Composition Requirements:

The pavement marking paint shall be a ready-mixed, one component, water-borne lead-free traffic line paint, of the correct color, to be applied to either asphaltic or Portland cement concrete pavement. The composition of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to produce a pigmented water-borne paint containing all the necessary co-solvents, dispersant, wetting agents, preservatives and all other additives, so that the paint shall retain its viscosity, stability and all of the properties as specified herein. The manufacturer shall certify that the product does not contain mercury, lead, hexavalent chromium, toluene, chlorinated solvents, hydrolyzable chlorine derivatives, ethylene-based glycol ethers and their acetates, and not any carcinogen, as defined in 29 CFR 1910.1200. Lead content shall not exceed 0.06 percent of weight of the dry film, and the test for chromium content shall be negative. No glass beads will be allowed in the pavement marking paint. Glass beads will be applied after the paint has been applied.

#### Manufacturing Formulations:

The manufacturer shall formulate the pavement marking paint in a consistent manner and notify the Engineer of any change of formulation. The formulation of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to formulate paint which will meet the quantitative and qualitative requirements of this specification. Any change in the formulation of the paint must be approved by the Engineer.

#### Quantitative Requirements of Mixed Paints:

Pigment	White	Yellow:
Percent by weight, ASTM D 3723,	± 2.0	± 2.0
allowable variation from qualifying sample		
Non-Volatile Content:		
Percent by weight, ASTM D 2369,	± 2.0	± 2.0
allowable variation from qualifying sample		
Viscosity: Krebs Units at 77 ± 1 oF, ASTM D 562	70 - 85	70 - 85
Weight per Gallon:		
pounds per gallon 77 ± 1 oF, ASTM D 1475P,	± 0.3	± 0.3
allowable variation from qualifying sample		
Vehicle Composition:		
Vehicle Infrared Spectra, ASTM D 2621,	None	None
allowable variation from qualifying sample		
PH: ASTM E 70,	± 1.0	± 1.0
allowable variation from qualifying sample		

Fineness of Dispersion: HEGMAN, minimum, ASTM D 1210	3.0	3.0
Volatile Organic Compounds: pounds per gallon of paint, maximum, ASTM D 3960 according to 7.1.2.	2.1	2.1
Flash Point : Degrees F., minimum, ASTM D 93, Method A	100	100
Dry Time to No Pick Up: with no beads: minutes, maximum, ASTM D 711	10	10
Dry Through Time: Minutes, ASTM D 1640 except no thumb pressure is used when thumb is rotated 90 degrees on paint film	20	20
Flexibility: TT-P-1952D	Pass	Pass

Qualitative Requirements:

(1) Color of Yellow Paint :

The color of the yellow paint shall closely match Federal Standard 595b, Color No. 33538. The color shall be checked visually, and will be checked against Tristimulus Values for the color according to Federal Test Method Standard No. 141.

(2) Dry Opacity:

Dry opacity for the paint will be determined using a black-white Leneta Chart, Form 2C Opacity and a Photovolt 577 Reflectance Meter or equal. Using a 10-mil gap doctor blade, a film of paint is drawn down, covering both black and white portions of the chart . The film shall be allowed to dry 24 hours. After calibrating the Reflectance Meter according to the manufacturer 's instructions, measure the reflectance over the white and black portions with the green Tristimulus filter. Dry Opacity is calculated as follows:

$$\text{Dry Opacity} = \frac{\text{Reflectance over black}}{\text{Reflectance over white}}$$

Dry Opacity for both white and yellow paint shall be a minimum 0.90.

(3) Yellowness Index:

Yellowness Index for white paint will be determined as described for dry opacity, only use a 15-mil gap doctor blade to draw down the paint. After 24 hours for drying, measure the reflectance of the paint film, using the green, blue, and amber Tristimulus filters. Calculate the Yellowness Index as follows:

$$\frac{\text{Amber} - \text{Blue}}{\text{Green}}$$

$$\text{Yellowness Index} = \frac{\text{Amber} - \text{Blue}}{\text{Green}} \times 100$$

Yellowness Index for the white paint shall be a maximum of 10.

(4) Reflectance:

Reflectance for both white and yellow paint will be determined using the same 15-mil draw-down film as for the Yellowness Index. For white paint the same sample may be utilized for both the Yellowness Index

and Reflectance. Measure the reflectance of the paint film using the green Tristimulus filter. Reflectance for the white paint shall be a minimum of 85. Reflectance for the yellow paint may range from 42 to 59, inclusive.

(5) UV Color Durability:

UV Color Durability shall be determined using a QUV Weatherometer, with Ultra Violet Light and Condensate Exposure according to ASTM G 53, for 300 hours total. The repeating cycle shall be four hours UV exposure at 60 degrees C followed by four hours condensate exposure at 40 degrees C. After 300 hours of exposure, the Yellowness Index for white paint shall not exceed 12, and yellow paint must still match Federal Standard 595b, Color No. 33538.

(6) Static Heat Stability:

To determine static heat stability for the paint, place one pint of paint in a sealed can and heat in an air circulation oven at  $120 \pm$  one degrees F for a period of one week. Remove the paint from the oven and check the viscosity in Krebs Units at  $77 \pm$  one degrees F according to ASTM D 562. The viscosity measured must be in the range from 68 to 90, inclusive. Also, check for any signs of instability.

(7) Heat-Shear Stability:

To determine heat-shear stability for the paint, one pint of the paint is sheared in a Waring Blender at high speed to 150 degrees F. The blender should have a tight fitting lid taped onto it to minimize volatile loss. When the paint reaches 150 degrees F, stop the blender, immediately pour the paint into a sample can, and apply a cover to seal the can. Let the paint cool overnight and examine for jelling or other signs of instability. Measure viscosity in Krebs Units at  $77 \pm$  one degrees F according to ASTM D 562. The viscosity measured must be in the range from 68 to 95 inclusive. If not within the upper limit, run total solids on the sheared paint and adjust solids, if necessary, by adding water to reach the original solids content. If the solids content required adjustment, again check the viscosity of the paint. The viscosity must be in the range from 68 to 95 inclusive.

(8) Scrub Resistance:

Scrub Resistance will be determined according to ASTM D 2486. Use an appropriate doctor blade to provide a dry film thickness of three to four mils. Allow the paint to cure for 24 hours. Perform the scrub resistance test at  $77 \pm$  one degrees F and  $50 \pm$  five percent humidity. Record the number of cycles to remove the paint film. The number of cycles recorded must be a minimum of 800.

(9) Spraying Properties:

The paint shall be applied at a 15 mils wet film thickness in the field. The paint shall show the following properties at ambient temperatures of 50 to 100 degrees F with a paint spray temperature of 150 degrees F, maximum, and six to eight pounds of post-applied glass beads per gallon of paint. Beads shall conform to subsection 708-2.02 of these specifications.

- (a) Dry to a no-track condition in five minutes or less when the line is crossed over in a passing maneuver with a standard-sized automobile.
- (b) Produce a clean-cut, smooth line with no overspray or puddling.
- (c) Paint immediately after application shall accept glass beads so that the spheres shall be embedded into the paint film to a depth of 50 percent of their diameter.
- (d) Paint when heated to the temperature necessary to obtain the specified dry time, shall show no evidence of instability such as viscosity increase, jelling, or poor spray application.

(10) Freeze-Thaw Properties:

The paint viscosity or consistency shall not change significantly when the paint is tested for resistance to five cycles of freeze-thaw according to ASTM D 2243.

(11) Road Service Rating:

Test stripes of the paint shall be applied transversely across the road, four inches in width and approximately 12 feet long at a location approved by the Engineer. Wet film thickness of the test stripes shall be approximately 15 mils as determined according to ASTM D 4414 and ASTM D 713 prior to test

stripe application. To aid in obtaining the correct film thickness, a length of roofing paper placed by the side of the road can be used. Place a rigid metal test panel on the roofing paper in the path of a test line. Immediately after the test line is applied by the striper, measure the wet film thickness. If not satisfactory, adjust the spray pressure and repeat until the target wet film thickness is attained. It is important that no glass beads be present that would give a false wet film thickness. When the wet film thickness is correct, apply a test line across a tared metal test panel. After this, apply another test line across a different tared metal test panel, this time also adding the beads. These samples are necessary to determine the initial bead retention.

Glass beads conforming to the requirements of Subsection 708-2.02 of these specifications (moisture proof type) will be applied after the paint has been applied, but during the same striping operation at a rate such that the initial bead retention on the test line is a minimum of six pounds of beads per gallon of wet paint. The initial bead retention will be determined analytically by the ADOT Materials Group concurrently with the determination of the dry paint thickness utilizing tared metal test panels. The paint shall accept the glass beads so that the spheres are embedded into the paint film to a depth of 50 percent of their diameter. Test stripes will be observed for a period of 180 days from date of application. Paints will be evaluated for wear according to ASTM D 913.

After 180 days of service, on a visual rating scale of 0 to 100 percent, paints must have a rating of 92 percent or better to be acceptable. All ratings will be taken in the wheel track area. Glass beads shall show no more than a 30 percent loss after 180 days of test. This will be determined by taking close-up photographs of the paint film and by count determining the average bead loss. The road service test may be waived at the option of the Engineer or evaluated for a period of time less than 180 days.

(12) Workmanship:

Paint shall be free from foreign materials, such as dirt, sand, fibers from bags, or other material capable of clogging screens, valves, pumps, and other equipment used in a paint striping apparatus. The paint pigment shall be well ground and properly dispersed in the vehicle. The pigment shall not cake or thicken in the container, and shall not become granular or curdled. Any settlement of pigment in the paint shall result in a thoroughly wetted, soft mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sidewise manual motion of a paddle across the bottom of the container, to form a smooth uniform product of the proper consistency. If the paint cannot be easily redispersed, due to excessive pigment settlement as described above or due to any other cause, the paint shall be considered unfit for use.

The paint shall retain all specified properties under normal storage conditions for 12 months after acceptance and delivery. The contractor shall be responsible for all costs and transportation charges incurred in replacing paint that is unfit for use. The properties of any replacement paint, as specified herein, shall remain satisfactory for eight months from the date of acceptance and delivery.

(F) Manufacturing Requirements:

(1) Inspection:

The manufacturer of the paint shall advise the Engineer when paint is to be manufactured, shall furnish the Engineer free access to all parts of the plant involved in the paint manufacture, and shall furnish every reasonable facility for sampling both the paint and the raw materials during the process of manufacturing. All materials used in formulation shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

All manufactured paint shall be prepared at the factory ready for application. When paint is shipped to a distributor or paint applicator who will store the paint prior to its use, the distributor or paint applicator shall furnish the Engineer free access to all parts of the facility where paint is stored and shall furnish every reasonable facility for sampling the paint.

Paint shall normally be sampled at the place of storage either at a warehouse or on the site prior to application of the paint. Application of the paint will not be permitted until the paint has been approved by

the Engineer. It is the contractor's responsibility to notify the Engineer a minimum of 14 working days prior to any traffic painting operation and to allow access at that time for paint sampling at the storage location. A minimum of one paint sample shall be obtained from each lot of paint.

Check-samples of finished paint while being applied will be taken at intervals as determined by the Engineer.

(2) Testing:

All tests will be conducted in accordance with the latest test methods of the American Society for Testing and Materials, Federal Test Method Standard No. 141, and methods in use by the Materials Group, Highways Division, and the Arizona Department of Transportation as specified herein. Evidence of adulteration or improper formulation shall be cause for rejection.

(3) Packaging:

All shipping containers for paint must comply with the Department of Transportation Code of Federal Regulations, Hazardous Materials and Regulation Board, Reference 49 CFR. The container and lids must be lined with a suitable coating so as to prevent attack by the paint or by agents in the air space above the paint. The lining must not come off the container or lid as skins.

Containers shall be colored white, including lids, and containers shall have an identifying band of the appropriate color around and within the top one third of the container. All containers shall be properly sealed with suitable gaskets, shall show no evidence of leakage, and shall remain in satisfactory condition for a period of 12 months after delivery to a distributor or paint applicator. The contractor shall be responsible for all costs and transportation charges incurred in replacing paint and containers.

(4) Marking:

All containers of paint shall be labeled showing the manufacturer's name, date of manufacture, paint color, product code, manufacturer's batch number, and quantity or weight of paint on both the side of the container and also the lid. Containers shall be clearly marked or labeled Rapid or Fast Dry lead-free Water-Borne Traffic Paints. All containers of paint shall be labeled to indicate that the contents fully comply with all rules and regulations concerning air pollution control in the State of Arizona, Maricopa County. The manufacturer of the paint shall be responsible for proper shipping labels with reference to whether the contents are toxic, corrosive, flammable, etc., as outlined in the U.S. Department of Transportation, Hazardous Materials Regulations, Reference 49 CFR.

(5) Unused Paint :

Disposal of unused quantities of traffic paint shall be the responsibility of the contractor and must meet all applicable Federal regulations for waste disposal. Paint which is saved to be used later shall be packaged as specified previously and shipped to a storage location. Unused paint must be identified on the container. Unused paint may be utilized on a future project provided the paint still conforms to all specifications contained herein.

Construction Requirements:

Equipment:

The traffic paint and beads shall be placed on the pavement by a spray-type pavement marking machine except that temporary striping during construction may be placed with other equipment designed for application of paint and beads.

The application equipment to be used on roadway installation shall have, as a minimum, the following characteristic and/or apparatus:

The machine shall be capable of applying clear-cut lines of the width specified on the project plans. The machines shall be equipped with a mechanical device capable of placing a broken reflectorized line with a 10-foot painted segment and a 30-foot gap. The machine shall be equipped with an air-operated glass bead drop-in dispenser controlled by the spray gun mechanism. A glass bead dispenser which is

capable of placing the glass beads into the paintline as the paint is applied to the pavement shall be utilized. This dispenser shall provide satisfactory marking and delineation.

**Application:**

Pavement markings shall be applied when the pavement surface is dry and the weather is not foggy, rainy, or otherwise adverse to the application of markings. The surface shall be free from excess asphalt or other deleterious substances before traffic paint, beads or primer are applied. The contractor shall remove dirt, debris, grease, oil, rocks or chips from the pavement surface before applying markings. The method of cleaning the pavement surface and removal of detrimental material is subject to approval by the Engineer and shall include sweeping and the use of high-pressure air spray. The placing of traffic markings shall be done only by personnel who are experienced in this work.

Painting shall not be performed when the atmospheric temperature is below 50 degrees F when using water-borne paint, nor when it can be anticipated that the atmospheric temperature will drop below said 50 degrees F temperature during the drying period. Water-borne paints shall not be applied if rain is expected within one hour of its application, unless otherwise approved by the Engineer. Water-borne paint shall not be heated to a temperature greater than 150 degrees F to accelerate drying.

The volume of paint in place shall be determined by measuring the paint tank with a calibrated rod. At the option of the Engineer, if the striping machine is equipped with air-atomized spray units (not air less) and paint gauges, the volume of paint may be determined by utilizing said gauges.

The quantity of glass reflectorizing beads in place shall be determined by measuring the glass reflectorizing bead tank with a calibrated rod. The contractor shall provide the necessary personnel and equipment to divert traffic from the installation area where the work is in progress and during drying time when, in the opinion of the Engineer, such diversion of traffic is necessary.

**Tolerances for Placing Paint, Beads, and Primer:**

The length of painted segment and gap shall not vary more than six inches in a 40-foot cycle. The finished line shall be smooth, aesthetically acceptable and free from undue waviness. Painted lines shall be four, eight, or 12 inches wide as shown on the plans with a tolerance of  $\pm 1/8$  inch and shall be placed at a minimum rate of 16 gallons per mile for a solid four-inch line and four gallons per mile for a broken four-inch line, based on a 10-foot stripe and a 30-foot gap (40-foot cycle aggregate). Glass reflectorizing beads shall be applied on the wet paint at a minimum rate of six pounds per gallon of paint. Wet thickness shall not be less than 15 mils.

- 2.2.55 ELECTRICAL CONDUIT (1") (PVC)
- 2.2.56 ELECTRICAL CONDUIT (1 1/2") (PVC)
- 2.2.57 PULL BOX (NO. 5)
- 2.2.58 PULL BOX (6" x 6" In Wall)
- 2.2.59 PULL BOX (8" x 6" In Wall)
- 2.2.60 CONDUCTOR (NO. 12)
- 2.2.61 CONDUCTOR (NO. 10)
- 2.2.62 CONDUCTOR (NO. 8)
- 2.2.63 CONDUCTOR (INSULATED BOND)
- 2.2.64 METER PEDESTAL CABINET (LIGHTING)
- 2.2.65 MISCELLANEOUS WORK (LED Rope)
- 2.2.66 MISCELLANEOUS WORK (POLE (14') (Decorative))
- 2.2.67 MISCELLANEOUS WORK (POLE FOUNDATION (STANDARD BASE)
- 2.2.68 MISCELLANEOUS WORK (MAST ARM (Decorative))
- 2.2.69 MISCELLANEOUS WORK (LUMINAIRE (LED) (GBLF3 Decorative))
- 2.2.70 MISCELLANEOUS WORK (Step Light Wall Fixture)

14' light poles shall be Holophane SSA or approved equal (Model number SSA1444C PLN FST). Shaft size shall be 4" square. All poles, mast arms and luminaires shall be painted with Pittsburgh Paints color #429-6 "Safari Brown". All poles shall be provided with a GFCI outlet and banner arms. The pole shall be placed in the ground plumb and straight. The base of the pole shall be oriented so that the handhole is located away from the sidewalk or street. Mast arms shall be Holophane GLD model GLD 30IN 1A BO QSM or approved equal. Mast arms shall be painted to match the pole. The mast arm shall be attached to the side of the pole per manufacturer's instructions. The end of the mast arm shall be vertical. Light poles shall be mounted on drilled shaft, balustrade foundations, or light blisters as shown on the plans. Concrete drilled shafts shall be designed by the Manufacturer or Contractor and be large and deep enough to support the light pole, including loads from luminaire, mast arm, signs and banners. A minimum of 3" of concrete cover shall be provided for rebar and/or anchor bolts. The Engineer may require foundations to be larger or deeper than on the plans because of soil conditions. All pole foundations shall set for 72 hours prior to pole installation.

Pole foundations shall include all conduit, elbows, anchor bolts, grounding wire and reinforcing steel. Cabinet foundations shall include conduit, elbows, anchor bolts and clearance pad. Concrete for drilled shaft foundations shall be Class S and shall have a required 28-day compressive strength of 3,500 pounds per square inch.

Standard anchor bolts, washers, and nuts shall be fabricated from steel conforming to the strength requirements of ASTM F1554 Grade 55. The anchor bolts, washers, and nuts shall be fully galvanized in accordance with the requirements of ASTM A153.

The excavations required for the installation of foundations and other items shall be performed in such a manner as to avoid any unnecessary damage to streets, sidewalks, landscaping, and other improvements. The trenches shall not be excavated wider than necessary for the proper construction of the foundations and other equipment. Excavation shall not be performed until immediately before construction of foundations. The material from the excavation shall be placed in a position that will minimize obstructions to traffic and interference with surface drainage. All surplus excavated material shall be removed and properly disposed of within 48 hours by the contractor, as directed by the Engineer. After each excavation is completed, the contractor shall notify the Engineer for inspection, and under no circumstances shall any underground materials or equipment be covered with fill without the approval of the Engineer. At the end of each working period, all excavations shall be barricaded or covered, or both, to provide safe passage for pedestrian and vehicular traffic. Excavations in the street or highway shall be performed in such a manner that not more than one traffic lane is restricted at any time. Sidewalk and pavement excavations shall be kept well covered and protected to provide safe passage for pedestrian and vehicular traffic until permanent repairs are made.

Signal and lighting pole foundations shall be set flush with the existing or new curb and sidewalk or flush with the finished grade where there is no curb or sidewalk, except in sloped areas they shall be as shown on the project plans. The dimensions and locations of foundations shall be as specified on the project plans; however, the Engineer may direct that changes be made in locations due to obstructions or other existing conditions. The contractor shall verify top of foundation elevations with the Engineer prior to foundation construction.

Concrete shall be placed in holes which have been augered against undisturbed earth. If the material in the bottom of the hole is not firm and stable, it shall be compacted or treated as directed by the Engineer. The walls and the bottoms of the holes shall be thoroughly moistened prior to placing the concrete. If the soil is not stable and a hole cannot be augered, forms shall be used. They shall be of the proper size and dimensions and shall be rigid and securely braced. The forms and the bottoms of the holes shall be thoroughly moistened prior to placing the concrete. Anchor bolts and conduit stubs shall be placed and held in proper alignment, position, and height during the placing and vibrating of concrete. All pole foundations shall set for three days prior to pole installation. Before the concrete for cabinet foundations has set, depressions shall be made around the anchor bolts for adjustment of the cabinet leveling nuts.

Anchor bolts, washers, and nuts required for relocating existing poles shall be furnished by the contractor. Poles shall be drilled and tapped for mounting hardware as shown on the Standard Drawings. Use of through bolts will not be permitted. Poles will be rejected if holes are not properly positioned for the required mounts. All poles shall be plumbed to the vertical with all mast arms and luminaires installed.

Sidewalks, curbs, gutters, pavement, base material, lawns, plants, and any other improvements removed, broken, or damaged by the contractor's operations shall be replaced or reconstructed with materials in accordance with these specifications. The replaced or reconstructed improvements shall be left in a serviceable condition satisfactory to the Engineer, and shall conform to these specifications where applicable. The contractor shall inspect the poles and provide the materials and work necessary to recondition the poles so they can be reused. Holes left in the shafts of existing poles, due to removal of items such as signal mounting assemblies, shall be repaired and painted with a zinc galvanized paint. If any poles are damaged by the contractor's operations, such repairs or replacements shall be at no additional cost to the city. New poles that are damaged by improper drilling of holes will be rejected.

Luminaires for path lighting shall be Holophane GlasWerks model GBLF3 P10 30K MVOLT PTH QSM AO NL1X1 or approved equal. Initial lumens shall be within the range of 3,000 to 4,000.

Where existing light poles are relocated, the existing foundation shall be removed to a depth of at least 2 feet below the final grade, or as directed by the Engineer. All voids shall be filled and made level with the surrounding ground. Any disturbed ground shall be restored to match the surrounding area. The Contractor shall take measurements of the existing foundation and anchor bolts and provide designs for the new foundations and anchor bolts. Shop drawings shall be approved by the Engineer.

The meter pedestal shall meet all APS and city requirements, and consist of the following equipment:

- Padmount Style
- Metered Service 120/240 Volt Single Phase 3 Wire to Include:
  - 100 AMP Meter Socket and Support Hardware
  - 4 Anchor Bolts, (Galvanized)

The cabinet shall be UL listed and of tamperproof construction with provisions for padlocks. The cabinet shall include a photoelectric control cell, manual control switch and contactor.

The cabinet layout shall generally conform to STD DWG TS 3-5 (Type 1 With Lighting Control). Number of circuit breakers and photocell control shall be per the panel schedule on the plans.

All wire and wiring material shall be in accordance with APS requirements.

The cabinet shall be leveled plumb and straight.

APS will furnish and install all wiring and conduit between the cabinet to the power source. The contractor shall furnish and install the wire from the luminaires and electrical equipment to the cabinet. The contractor shall notify APS five working days prior to installation to coordinate construction activities.

Electrical conductors shall be stranded or single conductor, thermoplastic insulated electrical wire or cable. Conductors shall conform to the specifications of the NEC, UL, and other applicable industry standards. Wire and cable for lighting and other electrical systems shall be UL listed and rated for 600-volt operation. The wire shall be annealed copper. The wire shall be solid for number 10 AWG and smaller, conforming to the requirements of ASTM B3 for annealed bare copper wire. Conductors for sizes number 8 AWG and larger shall be stranded and shall conform to ASTM B8 for Class B stranding. Unless otherwise specified, the conductors shall be insulated with THW grade thermoplastic compound and shall meet the requirements of UL 83. Insulation colors shall be permanent and an integral part of the insulation and shall not be applied as a surface treatment or coating. The insulation thickness shall conform to the requirements of the NEC. Conductor insulation shall be a solid color. The color shall be continuous over the entire length of the conductor.



All conduit and fittings shall be listed by UL, and conform to NEC standards. Except as specified below, all conduit to be installed underground or in concrete structures shall be rigid Polyvinyl Chloride (PVC) non-metallic type conforming to the requirements of UL 651 for Rigid Non-Metallic Conduit. PVC conduit and fittings shall be Schedule 40, heavy wall, manufactured from high impact material and shall be rated for use at 90 degrees C. Conduit warning tape shall be a 4-mil inert plastic film specially formulated for prolonged use underground. All tape shall be highly resistant to alkalis, acids, and other destructive agents found in the soil. Tape shall have a continuous printed message warning of the location of underground conduits. The message shall be in permanent ink specifically formulated for prolonged underground use and shall bear the words, "CAUTION - ELECTRIC LINE BURIED BELOW" in black letters on a red background.

Metal junction boxes and covers for installation in concrete structures shall be fabricated from a minimum of 16 gage type 304 stainless steel. All seams shall be continuously welded and shall conform to the dimensions shown on the project plans. A neoprene gasket with a thickness of 1/8 inch shall fit between the box and the cover. The cover shall be made to fit securely and shall be held in place with a minimum of four stainless steel machine screws. Tabs for ease of installation may be attached to the junction box at the option of the contractor.

Wall mounted pull boxes are to be 8" x 6" x 4", or as required to accommodate wire splicing and the electronic drivers necessary for wall and other low voltage lighting. The boxes shall have a watertight cover seal and metal lid secured by tamper resistant screws.

Conduit runs shown on the project plans shall be changed to avoid underground obstructions as directed by the Engineer. The contractor may, at its option and at no additional cost to the city, use a larger size conduit than specified provided the larger size is continuous for the entire length of the run from outlet to outlet. Reducing couplings will not be permitted. Changes in the location and size shown on the project plans shall be documented by the contractor and submitted to the Engineer. The PVC conduit shall be cut square and trimmed to remove all rough edges. Conduit connections shall be of the solvent weld type. Purple primer conforming to the requirements of ASTM F656 shall be applied to the joined surfaces prior to use of cement. The joint cement shall be the gray PVC cement conforming to the requirements of ASTM D2564. Where a connection is made to steel conduit, the coupling used shall be a PVC female adapter. Expansion fittings shall be installed in conduit runs in which both ends of the conduit are fixed in place such as between two foundations. Expansion fittings shall be installed in conduit runs which cross any expansion joint in a concrete structure. Approved expansion fittings shall allow for a linear thermal expansion of up to 6 inches.

If a trench has to be left open overnight, a minimum of 6 inches of backfill material shall be used as a protective cover to eliminate contraction of the conduit system. The backfill material shall be removed if final inspection by the Engineer has not been made. Backfill containing large rock, paving materials, cinders, large or sharply angular substance, or corrosive material, shall not be placed in an excavation where materials may damage raceways, cable, or other substructures or prevent adequate compaction of fill or contribute to corrosion of raceways, cables or other substructures. Where necessary to prevent physical damage to the raceway or cable, protection shall be provided in the form of granular or selected material, suitable running boards, suitable sleeves, or other approved means. All PVC conduit shall be stored and handled in an approved manner to minimize ultraviolet deterioration due to exposure to sunlight.

Conduits in protected areas such as behind curbs, in sidewalks, etc., that are not subject to any vehicular traffic shall be at a minimum depth of 18 inches. Conduits installed under roadways, driveways or any open areas where it is possible for vehicles to drive shall be at a minimum depth of 30 inches. When conduit in protected and open areas cannot be installed at the minimum depths, it shall be encased in concrete. Where specified due to shallow trenching depths, the conduit shall be encased in a minimum of 3 inches of concrete. The conduit shall be supported with masonry block or brick on 10-foot centers, during encasement, so that the conduit will be completely encased. Installation of conduit for underground primary service shall conform to the utility company requirements and local codes. Except for factory

bends, conduit bends shall have a radius of not less than that specified in the NEC. Conduit shall be bent without crimping or flattening, using the longest radius practicable.

Existing underground conduit to be incorporated into a new system shall be cleaned and blown out with compressed air. Conduit for future use shall have a number 8 AWG bare bond wire installed with at least 2 feet of pull wire doubled back into the conduit and capped. A 3-inch "Y" shall be cut into the face of the curb directly over conduit located under curbs. The contractor shall place warning tape in all trenches in which new conduit is placed. All warning tape shall be buried at a depth of 6 to 8 inches below the finished grade. Conduit entering pull boxes shall terminate a minimum of 3 inches inside the box wall. The conduit shall be between 2 and 4 inches above the bottom of the pull box and shall be sloped to facilitate pulling of conductors. Conduit entering through the bottom of a pull box shall be located near the sides and ends in order to leave the major interior portion clear. At all outlets, conduits shall enter from the direction of the run and allow for expansion and contraction. Conduit ends shall be capped with conduit end cap fittings until wiring is started. When end caps are removed, PVC ends shall be provided with an approved conduit end bell. End bells shall be installed prior to the installation of the conductors. Approved insulated grounding bushings shall be used on steel conduit ends.

Conduit embedded in concrete structures shall be securely attached to the reinforcing steel at intervals of approximately 12 inches. Expansion fittings shall be installed where conduit crosses expansion joints in the structure. Where bonding is not continuous, expansion fittings shall be provided with a bonding jumper of number 6 AWG flexible wire. Where it is not possible to use expansion fittings, sleeves of sufficient size shall be installed to provide a minimum 1/2-inch clearance between the conduit and the inside wall of the sleeve. The sleeve shall be discontinuous at the expansion joints. All existing conduits and conduit embedded in concrete structures shall be cleaned out with a mandrel and blown out with compressed air.

Conduit shall be installed under existing pavement by jacking or drilling methods approved by the Engineer. Open trench excavation across an existing roadway shall not be permitted without the written permission of the Engineer. Jacking and drilling pits shall be kept 2 feet clear of the edge of the pavement.

Pull boxes shall be installed in accordance with the details shown on the project plans and the standard drawings. Pull boxes shall be installed flush with the finished grade and when in concrete shall have a 1/2-inch felt expansion joint installed around all sides of the pull box. Junction boxes placed in concrete structures shall be flush with the finished concrete surface.

#### 2.2.71 PAINT EXST ADOT FACILITIES

Paint existing SR 179 bridge abutment and parapet walls within the construction area per ADOT Section 610. Contractor to submit paint samples and 3'x3' drawdowns to ADOT for review and approval. All paint shall match existing paint color.

Paint shall be pigmented water-repellent acrylic paint or approved equal meeting the requirements of ADOT Standard Specifications Section 1002.

Prior to paint application, the surfaces to be painted shall be cleaned in accordance with the manufacturer's recommendations for the removal of all dust, dirt, scale or other foreign substances which could be detrimental to the paint penetration or color. All surfaces to be painted shall be clean, completely dry and free of other foreign substances at the time of application of the paint. A minimum of two coats of paint shall be applied in accordance with the manufacturer's recommendations.

The Contractor shall cover and/or protect all other existing or new surfaces, including vegetation, in the vicinity of the painting operation.

Payment will be made at the contract Lump Sum bid, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to paint existing ADOT facilities.

#### 2.2.72 CONCRETE STAIN COLOR TREATMENT

The work shall consist of applying 'Permeon' by Soil Tech or approved equal concrete stain to all rock formliner (Barn wood and Yosemite Stone) finishes as shown on the plans. Contractor shall cover and /or protect all other exposed surfaces to prevent overspray and coating of elements not receiving the Permeon finish. Permeon shall be applied in three color applications to provide a 'mottled' natural appearance as approved by the City. Contractor to provide a 4'x4' sample concrete panel stained as required for approval by the City prior to final stain applications. Contractor shall coordinate with Soil Tech, 702-873-2023, [www.soil-tech.com](http://www.soil-tech.com) for installation of the Permeon product.

Payment will be made at the contract Lump Sum bid, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to place the Permeon as described or specified in the contract documents.

#### 2.2.73 WINDOW FRAME AND ART PANEL

The work shall consist of providing all window frame and art panels as shown and detailed on the project plans. All steel frame components shall conform to all applicable requirements of Section 515 of the MAG Specifications. 'ChromaLuxe' art panel shall be as provided by 'Image Craft'. Contractor shall coordinate with Martha Vermeire, 602- 305-4810 or 602-232-0719 for the preparation and manufacturer of the art panels, Polycarbonate panels, spacers and tamper proof connectors as required. The City of Sedona shall provide the final images to the Contractor for use by Image Craft for manufacturer of the final art panels.

The window frame shall be powder coated with 'RAL' 6033- Mint turquoise coating, or as approved by the City. A 12"x12" mock-up steel panel shall be powder coated by the contractor for review and approval prior to final manufacturer.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary as described or specified in the contract documents.

#### 2.2.74 BARREL SIGN BASE

The work shall consist of providing the rock filled barrel base elements, complete as shown and detailed on the plans. All steel mesh elements and construction requirements shall conform to the applicable requirements of Item 2.2.37 Gabion Mattress and Baskets. Contractor shall primer and paint all exposed surfaces of the fence and handrail elements. Color to match Dunn- Edwards 'Burns Cave' #DE6098 or as approved by the City. All Painting shall conform to the requirements of Section 530 of the MAG Specifications. River rock shall be a natural occurring rounded, river rock product. Contractor to provide rock samples for review by the City prior to filling the Barrel bases.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work as described or specified in the contract documents.

### 3 MISCELLANEOUS WORK

#### 3.1 Potholing

All utility potholing in existing paved streets shall be done using the air/vacuum type method. Dimensions for the potholing pavement cuts shall be limited to 12 inch by 12 inch square holes. All potholes shall be backfilled and patched in accordance with MAG Detail No. 212. Backfill material shall be 1-sack CLSM per MAG Spec Sec 728. Asphalt concrete pavement replacement shall use the same Marshall hot mix A.C Pavement as described on the plans. Asphalt thickness shall be 6-in minimum or match existing, whichever is greater. Asphalt shall be placed and compacted in 2-in lifts. The asphalt patch shall be crack sealed

afterward. Where potholes are done outside of the roadway pavement, all excavated materials shall be replaced resulting in conditions equal to or better than those prior to pothole work.

Measurement shall be per each pothole. Payment will be made at the unit price bid per each pothole made, backfill, compaction and pavement replacement. This is an incidental item and there will be no separate payment for pot-holing.

### 3.2 Earthwork

It is anticipated that excavations into the site soils for the proposed construction can be accomplished with conventional equipment. Excavations penetrating the underlying sandstone will require the use of heavy-duty, specialized equipment to facilitate rock break up and removal. On-site soils will pump or become unworkable at high water contents. Workability may be improved by scarifying and drying. Over excavation of wet zones and replacement with drier granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade pumping. The following maximum slope face angles are recommended for the materials indicated:

Material	Maximum Slope Face Angle (horizontal: vertical)
Soil	1:1
Disturbed Soil	1.5:1

Trenches with vertical side slopes shall be protected against slope failure. Temporary earth retaining systems will be required such as trench shields, rigid prefabricated steel, timber shoring, box shoring, and telescoping shoring.

#### 3.2.1 Site Clearing

Strip and remove existing vegetation, organic topsoils, debris, asphalt pavement, and any other deleterious materials from the proposed structure areas. The structure area is defined as that area within the structure footprint plus 5 feet beyond the perimeter of the footprint. All exposed surfaces should be free of mounds and depressions which could prevent uniform compaction. Sloping areas steeper than 5:1 (horizontal: vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be level and wide enough to accommodate compaction and earth moving equipment.

#### 3.2.2 Foundation Preparation

Scarify, moisten or dry as required, and compact all subgrade soils to a minimum depth of 8 inches. The subgrade preparation should be accomplished in a manner which will result in uniform water contents and densities after compaction. Scarifying and recompacting are not required in areas where bedrock or heavily cemented formations are encountered.

#### 3.2.3 Materials

Clean on-site native soils with a maximum dimension of 6 inches or imported materials may be used as fill material for the following:

- foundation areas
- culvert areas
- pavement areas
- backfill

Frozen soils should not be used as fill or backfill.

Imported soils should conform to the following:

Gradation (ASTM C136):	percent finer by weight
6"	100
4"	85-100
¾"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	50 (max)
Maximum expansive potential (%)*	1.5
Maximum soluble sulfates (%)	0.10
*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged.	

Base course should conform to MAG specifications.

#### 3.2.4 Placement and Compaction

Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.

Uncompacted fill lifts should not exceed 8 inches.

No fill should be placed over frozen ground.

Materials should be compacted to the following:

Material	Minimum Percent Compaction (ASTM D698)
On-site and imported soils, reworked and fill:	
Below footings 95	95
Below culverts 95	95
Below pavement 95	95
Aggregate base:	
Below culverts	95
Below pavement	100
Miscellaneous backfill	95

On-site and imported soils with low expansive potential and aggregate base course materials should be compacted with moisture content in the range of 3 percent below to 3 percent above optimum.

## **4 ALTERNATIVE BID ITEMS**

### **4.1 Alternative Bid Item 1 – WATERWHEEL**

The work under this item is for the Alternative Bid Item to install the Waterwheel feature and all associated elements required per plans.

Measurement and payment for this item shall be by Lump Sum complete in place as an alternative bid item. The work under this item shall consist of the labor and equipment necessary for the installation of the waterwheel feature as shown on the plans.

The item numbers listed below correspond to the sub-item numbers required for the Waterwheel.

- 4.1.1 9-FOOT WATERWHEEL
- 4.1.2 WHEEL SUPPORT COLUMN
- 4.1.3 WHEEL SCUPPER AND SUPPORT SYSTEM
- 4.1.4 WATER BASIN AND CONTAINMENT TROUGH
- 4.1.5 IRONWORKS WATER GRATE (8-INCH RIVER ROCK FINISH)
- 4.1.6 POND PUMP
- 4.1.7 WATER METER AND BACKFLOW PREVENTER
- 4.1.8 AGT GLOW STONE
- 4.1.9 CIP SEAT WALL
- 4.1.10 HAND WATER PUMP AND ACTIVATOR
- 4.1.11 1-INCH SCH 40 PVC
- 4.1.12 2-INCH SCH 40 PVC SLEEVE

The work under these items shall include miscellaneous structural, aesthetic and drainage features required for the Waterwheel at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans, Item Specs 4.2.1 and 4.2.12 unless noted otherwise.

- 4.1.13 FLAT SHEET ALUMINUM SIGN PANEL
- 4.1.14 CONDUCTOR (NO.8)

The work under these items shall include miscellaneous signing and power required for the Waterwheel feature at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans, Item Specs 4.2.13 and 4.2.14 unless noted otherwise.