INVITATION FOR BIDS

PROJECT PH18-V24 PH20-V75 WA11-19

CONSTRUCTION OF CLARKDALE WATER IMPROVEMENTS

YAVAPAI-APACHE NATION RESERVATION

YAVAPAI COUNTY, ARIZONA

November 2026

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YAVAPAI-APACHE NATION RESERVATION
YAVAPAI COUNTY, ARIZONA



November 2026

CONSTRUCTION OF CLARKDALE WATER IMPROVEMENTS
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YAVAPAI COUNTY, ARIZONA

TABLE OF CONTENTS

ADVERTISEMENT FOR BIDS 1

INSTRUCTIONS TO BIDDERS 1

ARTICLE 1— DEFINED TERMS 1
ARTICLE 2— BIDDING DOCUMENTS 1
ARTICLE 3— QUALIFICATIONS OF BIDDERS 2
ARTICLE 4— PRE-BID CONFERENCE 2
ARTICLE 5— PROJECT SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE 2
ARTICLE 6— BIDDER'S REPRESENTATIONS AND CERTIFICATIONS 5
ARTICLE 7— INTERPRETATIONS AND ADDENDA 5
ARTICLE 8— BID SECURITY 5
ARTICLE 9— CONTRACT TIMES 6
ARTICLE 10— SUBSTITUTE AND "OR EQUAL" ITEMS 6
ARTICLE 11— SUBCONTRACTORS, SUPPLIERS, AND OTHERS 7
ARTICLE 12— PREPARATION OF BID 7
ARTICLE 13— BASIS OF BID 8
ARTICLE 14— SUBMITTAL OF BID 9
ARTICLE 15— MODIFICATION AND WITHDRAWAL OF BID 9
ARTICLE 16— OPENING OF BIDS 10
ARTICLE 17— BIDS TO REMAIN SUBJECT TO ACCEPTANCE 10
ARTICLE 18— EVALUATION OF BIDS AND AWARD OF CONTRACT 10
ARTICLE 19— BONDS AND INSURANCE 11
ARTICLE 20— SIGNING OF AGREEMENT 11
ARTICLE 21— SALES AND USE TAXES [DELETED] 11
ARTICLE 22— CONTRACTS TO BE ASSIGNED [DELETED] 11
ARTICLE 23— FEDERAL REQUIREMENTS 11

BID FORM FOR CONSTRUCTION CONTRACT 1

ARTICLE 1— OWNER AND BIDDER 1
ARTICLE 2— ATTACHMENTS TO THIS BID 1
ARTICLE 3— BASIS OF BID—UNIT PRICES 1
ARTICLE 4— TIME OF COMPLETION 2
ARTICLE 5— BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA 2
ARTICLE 6— BIDDER'S REPRESENTATIONS AND CERTIFICATIONS 3

BID BOND (PENAL SUM FORM) 1

NOTICE OF AWARD 1

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE) 1

ARTICLE 1— WORK 1
ARTICLE 2— THE PROJECT 1
ARTICLE 3— ENGINEER 1
ARTICLE 4— CONTRACT TIMES 1

ARTICLE 5— CONTRACT PRICE 2
ARTICLE 6— PAYMENT PROCEDURES 3
ARTICLE 7— CONTRACT DOCUMENTS 4
ARTICLE 8— REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS 5

PERFORMANCE BOND 1

PAYMENT BOND 1

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT 1

ARTICLE 1— DEFINITIONS AND TERMINOLOGY 1
ARTICLE 2— PRELIMINARY MATTERS 7
ARTICLE 3— CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE 9
ARTICLE 4— COMMENCEMENT AND PROGRESS OF THE WORK 12
ARTICLE 5— SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS 14
ARTICLE 6— BONDS AND INSURANCE 22
ARTICLE 7— CONTRACTOR'S RESPONSIBILITIES 27
ARTICLE 8— OTHER WORK AT THE SITE 41
ARTICLE 9— OWNER'S RESPONSIBILITIES 43
ARTICLE 10— ENGINEER'S STATUS DURING CONSTRUCTION 44
ARTICLE 11— CHANGES TO THE CONTRACT 46
ARTICLE 12— CLAIMS 51
ARTICLE 13— COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK 52
ARTICLE 14— TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK 57
ARTICLE 15— PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD 60
ARTICLE 16— SUSPENSION OF WORK AND TERMINATION 67
ARTICLE 17— FINAL RESOLUTION OF DISPUTES 69
ARTICLE 18— MISCELLANEOUS 70

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT 1

ARTICLE 1— DEFINITIONS AND TERMINOLOGY 1
ARTICLE 2— PRELIMINARY MATTERS 2
ARTICLE 3— CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE 3
ARTICLE 4— COMMENCEMENT AND PROGRESS OF THE WORK 3
ARTICLE 5— SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS 3
ARTICLE 7— CONTRACTOR'S RESPONSIBILITIES 8
ARTICLE 8— OTHER WORK AT THE SITE 9
ARTICLE 9— OWNER'S RESPONSIBILITIES 9
ARTICLE 10— ENGINEER'S STATUS DURING CONSTRUCTION 10
ARTICLE 11— CHANGES TO THE CONTRACT 13
ARTICLE 12— CLAIMS 13
ARTICLE 13— COST OF WORK; ALLOWANCES, UNIT PRICE WORK 13
ARTICLE 14— TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCCEPTANCE OF DEFECTIVE WORK 13
ARTICLE 15— PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD 13
ARTICLE 16— SUSPENSION OF WORK AND TERMINATION 14
ARTICLE 17— FINAL RESOLUTIONS OF DISPUTES 14
ARTICLE 18— MISCELLANEOUS 17
ARTICLE 19— FEDERAL REQUIREMENTS 18

WORK CHANGE DIRECTIVE NO.: 1

CHANGE ORDER NO.: 1

EXHIBITS 1

EXHIBIT A – YAVAPAI-APACHE NATION ARBITRATION CODE..... 2
EXHIBIT B – YAVAPAI-APACHE NATION TERO CODE..... 7
EXHIBIT C – INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT FORM..... 20
EXHIBIT D – QUALIFICATIONS STATEMENT FORM..... 26
EXHIBIT E – CONTRACTORS BID..... 39
EXHIBIT F – DAVIS BACON ACT CONTRACT PROVISIONS REQUIRED UNDER 29 CFR SECTION 5.5 41
EXHIBIT G – DAVIS BACON WAGE RATES..... 54
EXHIBIT H – TECHNICAL PROVISIONS/MODIFIED SPECS..... 56
EXHIBIT I – PLAN SET..... 143

ADVERTISEMENT FOR BIDS

YAVAPAI-APACHE NATION
YAVAPAI COUNTY, ARIZONA
CLARKDALE WATER IMPROVEMENTS

General Notice

YAVAPAI-APACHE NATION (Owner), a Federally Recognized Indian Tribal Government, is requesting Bids for the construction of the following Project:

CLARKDALE WATER IMPROVEMENTS
PH18-V24 PH20-V75 WA11-19

Bids for the construction of the Project will be received at the Yavapai-Apache Nation Administration Office located at 2400 W. Datsi Street, Camp Verde, AZ 86322, until January 5th, 2027 at 10 a.m. local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

> **The installation of water mains, gate valves, hydrants, water meters, water service lines, air release valves, appurtenances, and asphalt repair. The removal of water meters, gate valves, hydrants and other appurtenances.**

Bids are requested for the following Contract: **PH18-V24 PH20-V75 WA11-19, CLARKDALE WATER IMPROVEMENTS**

Engineer of Record: Indian Health Service, Joel Garcia, P.E. (herein "Engineer" and/or "Owner's Technical Advisor")

Project Engineer: Indian Health Service, Joel Garcia, P.E. (herein "Engineer" and/or "Owner's Technical Advisor")

Owner's Representative: Robert B. Mills, Contracts and Grants (herein "Owners Representative")

Owner's Representative: Herbert Trujillo, Public Works Director (herein "Owners Representative")

Project Location: Yavapai-Apache Nation Reservation, Clarkdale, Arizona.

The Project has an expected duration of 300 days to Substantial Completion.

Obtaining the Bidding Documents

Information and Bidding Documents for the Project named PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements can be found at the following designated website:

https://yavapai-apache.org/bidroom/

The Bidding Documents include the Bidding Requirements, the proposed Contract Documents, and all Addenda (Two or more "Addendum" constitute the "Addenda"). Bidding Documents may be downloaded from the designated website. Prospective Bidders are urged to register with the designated website as a plan holder, regardless of whether Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with Addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, Addenda, and other Bidding Documents will be available only through the designated website. Prospective Bidders are encouraged to periodically check the designated website for updated Bidding Documents and information. Neither Owner nor Engineer will

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be responsible for Bidding Documents, including Addenda, if any, obtained from sources other than the designated website.

Yavapai-Apache Nation Tribal Employment Rights Office Code ("TERO") and Business Licensing.

Notice is hereby given that this Contract is subject to the Yavapai-Apache Nation Tribal Employment Rights Office Code (TERO). A copy of the TERO Code is included in the Exhibits to the Special Conditions and made a part of the Contract Documents. The Contractor (and its subcontractors, if any) agrees to fully comply with all requirements of the TERO Code. However, as provided under Section J2. Of the TERO Code, the TERO Compliance Fee *"shall not be assessed or collected from … Covered Employers with Covered Contracts that are primarily compensated (more than fifty percent (50%)) with tribal, federal or state governmental funds or nonprofit funds."* **The Owner acknowledges that under this Contract the Contractor will be compensated using tribal and/or federal funds and that therefore the Contractor (and its subcontractors) is not subject to payment of the TERO Compliance Fee.** Prior to issuance of a Notice to Proceed under this Contract, the Contractor shall meet with the Nation's TERO Officer and negotiate and enter into a Compliance Agreement as required under the Code. The Contractor acknowledges that under the Code the Contractor has the initial and primary responsibility to ensure that all of Contractor's Subcontractors comply with the Code. Upon Notice of Award and prior to issuance of the Notice to Proceed, the contractor will be required to submit a plan for compliance with the TERO Code. The Notice to Proceed will not be issued until the Owner has received and approved this plan.

For additional information on the TERO compliance requirements under this Agreement, the Contractor is advised to contact the TERO Officer, Larry Jackson Sr., at Phone (928) 567-1035, Mobil: (928)-301-6654.

Business License. Contractor shall obtain and maintain a Business License from the Yavapai-Apache Nation, Office of the Treasurer/Finance Director, as required under Section 401 E of the Nation's Procurement Code. Contractor can obtain a copy of the Nation's Application for Business License from the Yavapai-Apache Nation Finance Department located in the Nation's Administration Building at 2400 West Datsi Street, Camp Verde, Arizona 86322. The Nation's Treasurer/Finance Director can be reached by phone at (928)-567-1006. The Contractor shall be responsible for completing the application and licensing process with the Nation. Prior to commencing work under this contract, Contractor shall provide Owner a copy of the Business License issued by the Nation.

Pre-bid Conference

A non-mandatory pre-bid conference for the Project will be held on **Monday December 7th, 2026 at 10:00 AM** local time at the **Yavapai-Apache Nation Administration Office 2400 Datsi, Street, Camp Verde, AZ 86322.** A site visit will follow the pre-bid meeting. Attendance at the pre-bid conference is encouraged but not required.

Instructions to Bidders.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: **Yavapai-Apache Nation**
By: **Robert B. Mills, Owner's Representative**
Title: **Contracts & Grants**
Date: **November 20th, 2026**

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INSTRUCTIONS TO BIDDERS

ARTICLE 1—DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office*—The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered. For this project, the issuing office address shall be located at the Yavapai-Apache Nation, 2400 West Datsi Street, Camp Verde, Arizona, 86322.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents ("Agreement Between Owner and Contractor for Construction Contract (Stipulated Price)", Article 7, Section 7.01). It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, whether by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use of the Bidding Documents. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.

2.03 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 2020 or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.03.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and

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responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within **15** days of Owner's request for qualifications, Bidder must submit the following information:

A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.

B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.

C. Bidder's state or other contractor license number, if applicable.

D. Subcontractor and Supplier qualification information.

E. Other information regarding qualifications required by owner in its request for qualifications.

3.02 [DELETED]

3.03 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.04 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

4.01 [Deleted]

4.02 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

4.03 [Deleted]

4.04 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum (two or more "Addendum" constitute the "Addenda").

ARTICLE 5—PROJECT SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Project Site and Other Areas*

A. The Project Site ("Site") is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment,

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or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports, if any, of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to Owner, if any, of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

c. Reports and drawings known to Owner, if any, relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of the reports and drawings referenced above, if any, available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon, the accuracy of which Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

5.03 *Other Site-related Documents*

A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, the following other documents relating to conditions at or adjacent to the Site are known to Owner and made available to Bidders for reference:

1. None.

Owner will make copies of these other Site-related documents available to any Bidder on request.

B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.

C. The other Site-related documents are not part of the Contract Documents.

D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.

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E. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.

B. A Site visit is scheduled following the pre-bid conference. Maps to the Site will be available at the pre-Bid conference.

C. A Site visit is scheduled following the pre-bid conference. Arrangements for a site visit may be made by interested bidders by contacting Robert B. Mills (928) 567-1090. Maps to the Site will be made available upon request.

D. Bidders visiting the Site are required to arrange their own transportation to the Site.

E. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the following Owner or Engineer contact for visiting the Site: Robert B. Mills (928) 567-1090. Bidder must conduct the required Site visit during normal working hours.

F. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

G. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

H. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

I. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.06 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

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ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

A. All Request for Information (RFI), questions, and submittals shall be directed via email to Robert B. Mills: rmills@yan-tribe.org ("Owner's Representative") and Joel Garcia: joel.garcia@ihs.gov ("Project Engineer"). Submissions must be made no later than December 14th, 2026 4:00 PM Arizona Time. RFIs and their answers will be formatted, made anonymous, and shared with all prospective bidders within seven (7) calendar days of the submission deadline.

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **five** percent of Bidder's maximum Bid price and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's

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damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

9.02 Provisions for liquidated damages, if any, for failure to timely attain Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 The Contract for the Work, as awarded, basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute materials and equipment subsequently approved by Engineer prior to submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless a written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders through posting on the Designated Website. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.05 and 7.06 of the General Conditions after the Effective Date of the Contract.

10.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as

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supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

10.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 [DELETED]

11.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within five days after Bid opening:

A. Fire Hydrant Manufacturer/Supplier

B. Water Meter Manufacturer/Supplier

C. Backflow Preventer Manufacturer/Supplier

11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

11.05 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

11.06 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.07.N.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. Except as provided under 12.02 below, all blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

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12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.

12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the

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Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14—SUBMITTAL OF BID

14.01 The Bidding Documents to be submitted include one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate written notice of withdrawal document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.

15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid,

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and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any or all Bids and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner, in its complete discretion, reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right, in its complete discretion, to waive all minor Bid informalities not involving price, time, or changes in the Work.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. All such rejections will be final and without recourse on the part of the Bidder.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or by Owner prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for

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those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 *In evaluation of the bids, the Owner may, within funding limitations, give preference in the amount of five (5) percent above the lowest total responsive bid, to responsive, responsible, and qualified Indian owned firms*

ARTICLE 19—BONDS AND INSURANCE

19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by all required bonds and insurance documentation.

19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES [DELETED]

ARTICLE 22—CONTRACTS TO BE ASSIGNED [DELETED]

ARTICLE 23—FEDERAL REQUIREMENTS

23.01 *Federal requirements set out at Article 19 of the Supplementary Conditions apply to this Contract.*

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BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

Yavapai-Apache Nation

ATTN: Robert B. Mills, Owner's Representative

2400 West Datsi Street, Camp Verde, Arizona 86322

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. A copy of a valid CONTRACTOR's license for the state in which the work resides, at the time of bidding or Certification of Renewal;

C. A copy of the contractor's TERO Compliance Agreement;

D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

E. Indian Preference Form, if applicable;

F. A list of major subcontractors and suppliers:

G. A copy of Contractor's Business License issued by the Yavapai-Apache Nation;

H. A completed qualifications statement.

ARTICLE 3—BASIS OF BID—UNIT PRICES

3.01 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization/Demobilization	LS	1		$
2	Water Pipe, 8"	LF	4912		$
3	Water Service Line, 1" PE 4710, DR7 Pipe	LF	2590		$
4	Water Service Line, 2" PE4710	LF	81		$

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5	Fire Hydrant Lead, 6" DI AWWA C150/C151 Pipe	LF	291		$
6	Water Meter and Box Combination	EA	68		$
7	Service Line Connection	EA	68		$
8	2" Combination Air Release Valve Assembly	EA	1		$
9	12" Gate Valve	EA	1		$
10	8” Gate Valve	EA	26		$
11	6” Gate Valve	EA	17		$
12	Fire Hydrant Assembly (Including Bollards)	EA	13		$
13	Street Asphalt Repair	SY	2743		$
14	Extra Protection	LF	566		$
Total of All Unit Price Bid Items					$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.02 *Total Bid Price (Unit Prices)*

Total Bid Price (Total of Unit Price Bids)	$

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon written request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

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5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda: **[Add rows as needed. Bidder is to complete table.]**

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all applicable Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

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9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

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BID BOND (PENAL SUM FORM)

Bidder	**Surety**
Name: **[Full formal name of Bidder]** Address *(principal place of business)*: **[Address of Bidder's principal place of business]**	Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner	**Bid**
Name: **Yavapai-Apache Nation** Address *(principal place of business)*: **2400 West Datsi Street,** **Camp Verde, Arizona, 86322**	Project *(name and location)*: **PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements** **Yavapai-Apache Nation Indian Reservation** **Yavapai County, Arizona** Bid Due Date: **[Enter date bid is due]**

Bond

Penal Sum: **[Amount]**

Date of Bond: **[Date]**

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____ *(Full formal name of Bidder)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature) (Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title:	Title:

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

EJCDC® C-430, Bid Bond (Penal Sum Form).
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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation will be null and void if:

    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

    3.2. All Bids are rejected by Owner, or

    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the

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provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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NOTICE OF AWARD

Date of Issuance:

Owner: Yavapai-Apache Nation | Owner's Project No.: PH18-V24 PH20-V75 WA11-19

Engineer: Indian Health Service, Joel Garcia | Engineer's Project No.: PH18-V24 PH20-V75 WA11-19

Project: Clarkdale Water Improvements

Contract Name: PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated **[date]** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Work includes the installation of water mains, gate valves, hydrants, water meters, service lines, air release valves, appurtenances, and asphalt repair. The removal of water meters, gate valves, hydrants and other appurtenances.

The Contract Price of the awarded Contract is $**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

[Number of copies sent] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder's compliance]**

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Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **[Full formal name of Owner]**

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Copy: Engineer

EJCDC® C-510, Notice of Award.
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AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between **Yavapai-Apache Nation** ("Owner") and **[name of contracting entity]** ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Work includes the installation of water mains, gate valves, hydrants, water meters, service lines, air release valves, appurtenances, and asphalt repair. The removal of water meters, gate valves, hydrants and other appurtenances.**

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **The project will improve the existing water system in the Nation's Reservation community of Clarkdale.**

ARTICLE 3—ENGINEER

3.01 *The Owner has signed a Memorandum of Agreement with the Indian Health Service to provide engineering and other technical advisory services for the Project. As a sovereign entity (a federally recognized Indian Tribal Government), Owner retains decision making authority in the execution and administration of this Contract.*

3.02 The part of the Project that pertains to the Work has been designed by *Indian Health Service.*

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Project Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are material and of the essence of the Contract.

4.03 *Contract Times: Days*

A. The Work will be substantially complete within **300** *calendar* days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **330** *calendar* days after the date when the Contract Times commence to run.

4.05 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and

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Milestones not achieved within the Contract Times, as may be modified by the parties as provided under the Contract. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* If Contractor fails to achieve Substantial Completion within the contract time set for Substantial Completion, Contractor shall pay Owner $**500.00** for each calendar day that expires after the time (as may be duly adjusted pursuant to the Contract) specified above for Substantial Completion, and said payment shall accrue daily until Substantial Completion is achieved.

2. *Completion of Remaining Work:* After Substantial Completion is achieved, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as may be duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $**300.00** for each day that expires after such time until all remaining Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, will accrue separately, and will not be imposed concurrently. Owner may withhold accrued Liquidated Damages from payments due to Contractor under the Contract.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization/Demobilization	LS	1		$
2	Water Pipe, 8"	LF	4912		$
3	Water Service Line, 1" PE 4710, DR7 Pipe	LF	2590		$
4	Water Service Line, 2" PE4710	LF	81		$
5	Fire Hydrant Lead, 6" DI AWWA C150/C151 Pipe	LF	291		$
6	Water Meter and Box Combination	EA	68		$
7	Service Line Connection	EA	68		$

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8	2" Combination Air Release Valve Assembly	EA	1		$
9	12" Gate Valve	EA	1		$
10	8” Gate Valve	EA	26		$
11	6” Gate Valve	EA	17		$
12	Fire Hydrant Assembly (Including Bollards)	EA	13		$
13	Street Asphalt Repair	SY	2743		$
14	Extra Protection	LF	566		$
Total of All Unit Price Bid Items					$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. Total of Unit Price Work (subject to final Unit Price adjustment) $**[number]**.

D. For all Work, at the prices stated in Contractor’s Bid, which is attached hereto as Exhibit E.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor’s Applications for Payment (**e.g. - EJCDC C620 App for Payment (2018)**) on or about the **5th** day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. **90** percent of the value of the Work completed (with the 10 percent balance being retainage).

1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

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b. **90** percent of cost of materials and equipment not incorporated in the Work (with the 10 Percent balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **100** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **200** percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings (not attached but incorporated by reference) consisting of 24 sheets with each sheet bearing the following general title: **Clarkdale**.
7. Drawings listed on the attached sheet index.
8. Addenda (numbers **[number]** to **[number]**, inclusive).
9. Exhibits to this Agreement (enumerated as follows):
    A. **YAVAPAI-APACHE NATION ARBRITATION CODE**
    B. **YAVAPAI-APACHE NATION TERO CODE**
    C. **INDIAN ENTERPRISE QUALIFICATION STATEMENT FORM**
    D. **QUALIFICATIONS STATEMENT FORM**
    E. **CONTRACTOR'S BID**

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F. **DAVIS BACON ACT CONTRACT PROVISIONS REQUIRED UNDER 29 CFR SECTION 5.5**

G. **DAVIS BACON WAGE RATES**

H. **TECHNICAL PROVISIONS/MODIFIED SPECS**

I. **PLAN SET**

10. The following, which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:

    a. Notice to Proceed.

    b. Work Change Directives.

    c. Change Orders.

    d. Field Orders.

    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all applicable Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

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6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraphs 1-6 above, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on **[indicate date on which Contract becomes effective]** (which is the Effective Date of the Contract).

Owner:	Contractor:
Yavapai-Apache Nation *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: Buddy Rocha Jr. *(typed or printed)*	Name: _____ *(typed or printed)*
Title: Chairman *(typed or printed)*	Title: _____ *(typed or printed)* *(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices:	Address for giving notices:
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address:	Address:
Phone: _____	Phone: _____
Email: _____ *(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	Email: _____ License No.: _____ *(where applicable)* State: _____

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PERFORMANCE BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **Yavapai-Apache Nation** Mailing address *(principal place of business)*: **2400 West Datsi Street,** **Camp Verde, Arizona, 86322**	**Contract** Description *(name and location)*: **PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements** **Yavapai-Apache Nation Indian Reservation** **Yavapai County, Arizona** Contract Price: **[Amount from Contract]** Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

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5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

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statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **None**

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PAYMENT BOND

Contractor	**Surety**
Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner	**Contract**
Name: **Yavapai-Apache Nation** Mailing address *(principal place of business)*: **2400 West Datsi Street,** **Camp Verde, Arizona, 86322**	Description *(name and location)*: **PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements** **Yavapai-Apache Nation Indian Reservation** **Yavapai County, Arizona** Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

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8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **None**

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's

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decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by

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the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and

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start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that

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the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

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50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

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4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

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2.03 Before Starting Construction

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

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2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

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3.02 Reference Standards

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take

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precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

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ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

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C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. Abnormal weather conditions;
3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;
2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the

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activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise;

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(b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

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D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 Differing Subsurface or Physical Conditions

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement

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to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

    b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

    c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental

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Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question

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addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

    b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

    c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

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3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition

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and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

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ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the

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required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

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2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

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4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other Property Insurance

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

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D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

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1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at

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Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

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7.05 "Or Equals"

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

    a. in the exercise of reasonable judgment Engineer determines that the proposed item:

        1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

        2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

        3) has a proven record of performance and availability of responsive service; and

        4) is not objectionable to Owner.

    b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

        1) there will be no increase in cost to the Owner or increase in Contract Times; and

        2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

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E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

a. will certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design;

2) be similar in substance to the item specified; and

3) be suited to the same use as the item specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in

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Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or

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otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer,

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its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other

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action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any

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of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

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7.16 Submittals

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as

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Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two

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resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

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2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly

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employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

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G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be

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set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

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C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 Replacement of Engineer

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

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9.08 Inspections, Tests, and Approvals

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or

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as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04

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or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

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B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and

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11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

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2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

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ARTICLE 12—CLAIMS

12.01 Claims

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

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F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in

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connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

    c. *Construction Equipment Rental*

        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

        2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

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3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

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5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

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2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by

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Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 Uncovering Work

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

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B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include

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but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

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2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

    a. the Work has progressed to the point indicated;

    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

    b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

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b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

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l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial

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Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work,

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or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents;

b. consent of the surety, if any, to final payment;

c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in

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which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

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C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

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B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

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

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in

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connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

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ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 Computation of Times

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

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18.08 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

18.09 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

SC-1.01.A.3 Application for Payment

Amend the definition as follows:

Application for Payment—The form acceptable to Owner, which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

SC-1.01.A.11 Constituent of Concern

Amend the definition as follows:

Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to applicable Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

SC-1.01.A.24.a Hazardous Environmental Condition

Amend the paragraph to read as follows:

The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, applicable Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

SC-1.01.A.30 Owner

The definition of "Owner" is amended by adding the following at the end of the current definition:

Throughout the Agreement, the Term "Owner" denotes and refers to the Yavapai-Apache Nation in its capacity as a sovereign nation and as a federally recognized Indian Tribe, and which term may also be referred to in this Agreement as the "Nation." Any reference in this Agreement to "Tribe" or "Tribal" shall also be construed as referring to the Owner and the Nation.

SC-1.01.A.31 Progress Schedule

Amend the definition as follows:

Progress Schedule—A schedule, prepared and maintained by Contractor, as accepted by Engineer under Section 2.05 of the General Conditions, describing the sequence and duration of

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the activities comprising the Contractor's plan to accomplish the Work within the time authorized under the Agreement.

SC-1.01.A.51. Add the following new paragraph after Article 1.01.A.50:

Agency – This project is financed in whole or in part by the Indian Health Service Sanitation Facilities Construction Program (IHS) pursuant to, 42 U.S.C. 2004a, Public Law 86-121, Indian Sanitation Facilities Act. The Agency for these documents is the Indian Health Service (IHS).

SC-1.01.A.52. Add the following paragraph after Article 1.01.A.51:

Tribal Employment Rights Ordinance (TERO)—The Ordinance, the Law, or Code adopted by the Owner that establishes Owner's Tribal or Indian preference laws as well as Owner's wage and hour laws if any.

SC-1.01.A.53. Add the following paragraph after Article 1.01.A.52:

TERO Office—The Tribal Office charged by the Owner with administering Owner's TERO, establishing any necessary regulations, policies, forms and guidelines with respect to the TERO and ensuring compliance with the TERO by Employers whose operations are subject to the TERO.

ARTICLE 2—PRELIMINARY MATTERS

No suggested Supplementary Conditions in this Article.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No suggested Supplementary Conditions in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Commencement of Contract Times; Notice to Proceed

Delete Paragraph 4.01.A in its entirety and insert the following:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract.

SC-4.05.C.1. Delays in Contractor's Progress

Amend the sentence to read as follows:

Severe and unavoidable natural catastrophes such as fires, floods, epidemics, pandemics, and earthquakes;

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.06 Hazardous Environmental Conditions at Site

Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings of Hazardous Environmental Conditions at or contiguous to the Site are known to the Owner or Engineer.

B. Not used.

ARTICLE 6-BONDS AND INSURANCE

6.03 Contractor's Insurance

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. **Other Additional Insureds**—As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds, in addition to Owner, Owner's Advisor, and Engineer, the following: The Yavapai-Apache Nation, and the Employees, Officers and Elected Officials of the Yavapai-Apache Nation, including the Chairperson, Vice Chairperson and all Tribal Council Members.

E. **Workers' Compensation and Employer's Liability**—Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation, from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions.

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Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Employer's Liability	
Each accident	$1 Million
Each employee	$1 Million
Policy limit	$1 Million

F. **Commercial General Liability—Claims Covered**—Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on a per-project basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than CMAR's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
4. The Commercial General Liability insurance must be maintained throughout the duration of the Contract and for a minimum of three years after Substantial Completion.

G. **Commercial General Liability—Form and Content**. Contractor's commercial liability policy must be written in a 1996, or later, Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.
    b. Contractor shall furnish Owner and each other additional insured, as identified in the Supplementary Conditions or elsewhere in the Contract, evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.21.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through both ISO Endorsements CG 20 10 04 13 and CG 20 37 04 13. For design professional additional insureds, ISO Endorsement CG 20 32 04 13 "Additional Insured: Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. **Commercial General Liability—Excluded Content.** The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

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1. Any modification of the standard ISO definition of "insured contract," except to delete the railroad protective liability exclusion if CMAR is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property.
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the Contractor's vicarious liability, strict liability, or statutory liability, other than worker's compensation.
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. **Commercial General Liability—Minimum Policy Limits**

Commercial General Liability	Policy limits of not less than:
General Aggregate	$2 Million
Products—Completed Operations Aggregate	$2 Million
Personal and Advertising Injury	$1 Million
Bodily Injury and Property Damage—Each Occurrence	$1 Million

J. **Automobile Liability**—Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Each Accident	$1 Million

K. **Umbrella or Excess Liability**—Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$1 Million
General Aggregate	$1 Million

L. **Using Umbrella or Excess Liability Insurance to Meet Commercial General Liability and Other Policy Limit Requirements**— Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability insurance through the primary policies alone, or through combinations of the primary policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least

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as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $**1 Million** after accounting for partial attribution of its limits to underlying policies as allowed above.

M. **Contractor's Pollution Liability Insurance**—Where applicable because of the nature of the work, Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	**Policy limits of not less than:**
Each Occurrence/Claim	$1 Million
General Aggregate	$1 Million

N. **Contractor's Professional Liability Insurance**— Contractor shall purchase and maintain professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services (if any) by Contractor or by others for whom Contractor is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	**Policy limits of not less than:**
Each Claim	$1 Million
Annual Aggregate	$1 Million

O. **Unmanned Aerial Vehicle Liability Insurance**—If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, Contractor shall purchase and maintain UAV liability insurance in the amounts stated; name Owner, Owner's Advisor, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

Unmanned Aerial Vehicle Liability Insurance	**Policy limits of not less than:**
Each Occurrence	$1 Million
Privacy Injury Aggregate	$2 Million

SC-6.04 Delete Paragraph 6.04.A ("Builder's Risk") and insert the following in its place:

A. **Owner shall purchase and maintain builder's risk insurance** covering the Work on a completed value basis, in the amount of the Work's full insurable replacement cost, subject to such deductible amounts as may be provided in the Supplementary Conditions or required

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by Laws and Regulations. The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions. Owner will carry Builder's Risk and will not require Contractor to Carry Builder's risk insurance.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. **Builder's Risk Requirements**—The builder's risk insurance must:

1. be written on a builder's risk "Special Form" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following perils: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage, other than that caused by flood.

    a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.

    b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

3. cover expenses incurred in the repair or replacement of any insured property, including but not limited to fees and charges of contractors, owner's representatives, engineers, and architects.

4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site, but not including property stored at the premises of a manufacturer or Supplier. If this coverage is subject to a sublimit, such sublimit will be a minimum of $**100,000.00**.

5. extend to cover damage or loss to insured property while in transit. If this coverage is subject to a sublimit, such sublimit will be a minimum of $**25,000,000**.

6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.

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7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.

8. include performance/hot testing and start-up, if applicable.

9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.07.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.

10. include as named insureds the Owner only, with the Contractor named as an additional insured. Contractor is responsible to ensure insurance coverage from its Subcontractors.

11. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of up to 25% of the amount paid for the direct physical loss or damage to property covered.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provision:

G. **Coverage for Completion Delays**—The builder's risk policy will include, for the benefit of Owner, loss of revenue and soft cost coverage for losses arising from delays in completion that result from covered physical loss or damage to covered property. Such coverage will include, without limitation, fixed expenses, and debt service for a minimum of 12 months with a maximum deductible of 30 days, compensation for loss of net revenues, rental costs, and attorneys' fees and construction management, engineering, or other consultants' fees, if not otherwise covered.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

H. **Builder's Risk and Other Property Insurance Deductibles**—The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.

1. The builder's risk policy, or if applicable, the installation floater, will be subject to a deductible amount of no more than $5,000 for direct physical loss in any one occurrence.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

SC – 7.05.A. Or Equals

Amend the third sentence of Paragraph 7.05.A by striking out the following words:

Unless the specification or description contains or is followed by words reading that no like, equivalent, or 'or-equal' item is permitted.

SC – 7.07.B. *Or Equals*

Delete Paragraph 7.07.B in its entirety and insert the following in its place:

[Deleted]

SC – 7.07.E. Or Equals

Amend the second sentence of Paragraph 7.07.E by striking out the following words:

Owner also may require Contractor to retain specific replacements; provided, however, that

SC – 7.07.N. Or Equals

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Add the following new Paragraph immediately after Paragraph 7.07.M:

Contractor is required to perform at least 33 1/3% of the Work, measured as a percentage of the Contract Price, using their employees and equipment. Copies of Subcontract agreements may be required by the Engineer to verify the amount of work performed.

SC-7.15.B. Emergencies

Add a new paragraph immediately after Article 7.15.A:

A. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer and Owner. In addition, the Contractor must promptly report in writing to appropriate authorities and the Owner's representative all accidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the site, giving full details and statements of witnesses. If a claim is made by anyone against the Contractor or any Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Owner giving full details of the claim.

SC-7.19.A. Delegation of Professional Design Services

Delete Paragraph 7.19.A in its entirety and insert the following in its place:

[Deleted]

SC-7.19.B. Delegation of Professional Design Services

Delete Paragraph 7.19.B in its entirety and insert the following in its place:

[Deleted]

ARTICLE 8—OTHER WORK AT THE SITE

No suggested Supplementary Conditions in this Article.

ARTICLE 9—OWNER'S RESPONSIBILITIES

SC – 9.01.A. Communications to Contractor

Amend the Paragraph 9.01.A to read as follows:

Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor.

SC – 9.12.B. Safety Program

Add the following new Article immediately after Paragraph 9.12.B:

9.13 Owner's Site Representative

A. Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The

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Owner's Site Representative is not Engineer's consultant, agent, or employee. Owner's Site Representative will be the Indian Health Service.

9.14 Owner's Authority

A. Owner has the authority to reject Work if Contractor fails to perform Work in accordance with the Contract Documents.

B. Owner will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work.

C. Owner will seek technical advice of Engineer prior to making any decisions regarding the design, technical matters, or the Contract Documents."

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

SC – 10.01. Owner's Representative

Delete article 10.01.A in its entirety and insert in its place the following:

The Engineer shall act as owner's technical advisor during the construction period of this Contract. If directed by the Owner, Contractor may submit copies (originals sent to the Owner) of information such as submittals, progress payments, change order requests, etc., to the appropriate IHS office when technical assistance is required and requested by the Owner. The Engineer will submit any and all recommendations to the Owner for its decision. All direction to the Contractor shall come from the Owner with the technical advice of IHS.

SC – 10.01. Owner's Representative

Add the following new paragraph immediately after Paragraph 10.01.A:

B. At the request of the Owner, IHS will provide oversight and technical assistance on Contractor submittals, progress payments, change order requests, and other project related information submitted by the Contractor and make recommendations to the Owner.

SC – 10.02. Visit to Site

Add the following new paragraphs immediately after Paragraph 10.06.A:

C. All discussions about the Contract with the Owner's Contractor that includes IHS employees shall be conducted by and with direct participation of Owner's employees. The IHS may not make commitments or give direction to the Owner's Contractor. IHS employees cannot represent the Owner and Owner's employees cannot represent the IHS.

D. The IHS and Owner shall inspect all sanitation facilities constructed through Tribal procurement to ensure construction meets contract specifications. The procurement documents shall also note that the IHS inspector does not have authority to modify the Contract or issue direction to the Contractor. Following construction inspection, the IHS will advise the Owner on whether the construction meets the IHS interpretation of the Contract requirements."

SC – 10.03. Resident Project Representative

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Add the following language immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Owner. RPR's dealings with Contractor will only be through or in presence of and with the full knowledge and approval of Owner. RPR's dealings with Subcontractors will only be through or in presence of and with the full knowledge and approval of Owner and Contractor. The RPR will:

1. Conferences and Meetings: Attend meetings with Owner and Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.

2. Safety Compliance: Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. Liaison

    a. Serve as Engineer's liaison with Owner and Contractor. Working principally through Owner's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

    b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

    c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.

4. Review of Work; Defective Work

    a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.10.03

5. *Inspections and Tests*

    a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

    b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests:* Review Applications for Payment with Contractor.

7. *Completion*

    a. Participate in Engineer's visits regarding Substantial Completion.

    b. Assist in the preparation of a punch list of items to be completed or corrected.

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c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

8. Represent the Owner.

E. Contractor should be advised of the fact that his Contract is with the Owner, with Federal oversight to ensure the Work complies with all applicable Federal requirements. IHS inspection will only confirm quality assurance for the Federal government and the Owner but their presence will not be inferred as quality control for the Contractor nor is implying any contractual relationship. IHS inspection of facilities constructed through Tribal procurement is only part of the Federal oversight responsibility."

SC – 10.04. Engineer's Authority

Delete Paragraph 10.04.A in its entirety and insert in its place the following:

[Deleted]

SC – 10.06. Decisions on Requirements of Contract Documents and Acceptability of Work

Amend Paragraph 10.06.A to read as follows:

Engineer will provide recommendations to Owner regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In making such recommendations, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith."

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ARTICLE 11—CHANGES TO THE CONTRACT

No suggested Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCCEPTANCE OF DEFECTIVE WORK

SC – 14.03. Defective Work

Amend Paragraph 14.03.B to read as follows:

Owner's Authority: Owner has the authority to determine whether Work is defective, and to reject defective Work, with technical advice of Engineer.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

SC-15.01.D is replaced in its entirety to read as follows:

D. Payment Becomes Due

1. Fifteen (15) days after Owner's Advisor's presentation of the Application for Payment to Owner with Owner's Advisor's recommendation, the amount recommended, subject to any Owner set-offs, will become due, and when due will be paid by Owner to CMAR.

15.03 Substantial Completion

SC-15.03 Add the following to the end of Paragraph 15.03.B:

"If some or all of the Work has been determined not to be at a point of Substantial Completion and will require more than one re-inspection or re-testing by OA and Engineer, the cost of such re-inspection, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. Any re-testing costs shall be borne exclusively by the Contractor. If Contractor does not pay, or the parties are unable to agree as to the amount owed under this section, then Owner may impose a reasonable set-off against payments due under this Article 15."

15.08 Correction Period

SC-15.08 Add the following new Paragraph 15.08.G:

G. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is revised to be **two (2)** years after Substantial Completion. All other provisions of Paragraph 15.08.A of the General Conditions shall remain unchanged.

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ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01 of the General Conditions.

17.02 Arbitration

A. Subject to the Limited Waiver of Sovereign Immunity provided by Owner hereinbelow at Paragraph SC-17.02 (J), all matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect as of the date of this Contract, subject to the conditions and limitations of this Paragraph SC-17.02. Any controversy or claim in the amount of $100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the Yavapai-Apache Nation Arbitration Code, a copy of which is attached hereto as Exhibit A.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. Both parties shall be obligated to proceed by said arbitration as the exclusive means of resolving disputes hereunder. Any such arbitration shall proceed in a mutually agreed location in Yavapai County, Arizona, and the parties agree to be bound by the award of the arbitrator, which (in the case of all awards against the Owner) shall be filed in the Yavapai-Apache Nation Tribal Court for confirmation and enforcement in accordance with the Yavapai-Apache Nation Arbitration Code (Ordinance 19) in the form attached hereto as Exhibit A – Yavapai-Apache Nation Arbitration Code. Consistent with the Limited Waiver of Sovereign Immunity given by Owner and set out expressly below at Paragraph SC-17.02 (J), the parties agree to the exclusive jurisdiction of the Yavapai-Apache Nation Tribal Court for confirmation and enforcement of any such award by arbitration against Owner. However, in the event that the Nation's Tribal Court declines to enforce this arbitration agreement or any arbitration award in accordance with the provisions of Ordinance 19, the Tribal Court's decision to decline enforcement shall be subject to direct review by the United States Federal District Court for the District of Arizona on the limited questions of whether this arbitration agreement is enforceable or whether the Tribal Court correctly determined that enforcement should be declined under Ordinance 19. The Federal District Court shall not have authority to review the arbitration award or modify it in any way but shall only have authority to order enforcement of the arbitration award if it finds that the Tribal Court incorrectly declined to enforce the award under Ordinance 19. Any award entered by the arbitrator against the Contractor may be confirmed and enforced in any court of competent jurisdiction, including, but not limited to, the

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Yavapai-Apache Nation Tribal Court. Notwithstanding anything in this Contract, or in any law or regulation to the contrary, both parties to any such arbitration shall be responsible for payment of its own attorney's fees and all costs associated with the arbitration and its enforcement. In any arbitration proceeding conducted under the provisions of this Paragraph 17.02, both parties shall have the right to conduct discovery, to call witnesses and to cross-examine the opposing party's witnesses, either through legal counsel, expert witnesses, or both. In the event of any inconsistency between this agreement to arbitrate and the Rules of the American Arbitration Association, the provisions of this agreement shall control.

C. The Arbitration will be conducted before a panel of neutral arbitrators (or a by a single arbitrator should Owner and CMAR mutually agree to do so) chosen by mutual written agreement of the parties or (failing that) chosen by AAA in accordance with the above-cited Arbitration Rules. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages as defined in the Contract and in this Article 17. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.

D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties but will only have the authority to allocate attorneys' fees if this Contract permits them to do so.

E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.

F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided above.

G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity, including Owner's Advisor, Engineer, or their consultants, or the officers, directors, partners, agents, employees, or consultants of any entity that is not a party to this Contract unless:

1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;

3. such other individual or entity is subject to arbitration under a contract with either Owner or CMAR, or consents to being joined in the arbitration; and

4. the consolidation or joinder complies with the arbitration administrator's procedural rules.

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H. The award will be final, and subject to Owner's Limited Waiver of Sovereign Immunity set out at Paragraph SC-17.02 (J), judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

J. **Limited Waiver of Sovereign Immunity.** In order to provide for dispute resolution and the enforceability of this Contract by arbitration as provided above, Owner agrees to a limited waiver of its sovereign immunity as follows: (1) Owner agrees that all unresolved disputes arising under this Contract shall be submitted to arbitration as provided above under Paragraph 17.02 (A) through (I) and that such arbitration shall be the exclusive means of dispute resolution under this Contract; (2) owner agrees that the Yavapai-Apache Nation Tribal Court shall have subject matter jurisdiction over the resolution of disputes arising under this Contract for the limited purposes of compelling, confirming and enforcing any arbitration award arising under this Contract against Owner, in accordance with the Yavapai-Apache Nation Arbitration Code (ordinance 19) as attached hereto as Exhibit A and hereby made an additional contract document under the Contract. However, in the event that the Nation's Tribal Court declines to compel or enforce any arbitration award in accordance with the provisions of Ordinance 19, the Tribal Court's decision to decline to compel or enforce shall be subject to direct review by the United States Federal District Court for the District of Arizona (or in the Arizona superior court for Yavapai-County should the Federal District Court decline to exercise its jurisdiction for any reason) on the limited question of whether the Tribal Court correctly determined that enforcement should be declined under ordinance 19. The Federal District Court shall not have authority to review the arbitration award or modify it in any way but shall only have authority to compel arbitration or order enforcement of an arbitration award if it finds that the Tribal Court incorrectly declined to compel arbitration or to enforce an award under Ordinance 19; (3) the waiver of sovereign immunity provided by Owner hereunder shall not be construed to empower the arbitrator(s) to enter an award, or the Yavapai-Apache Nation Tribal Court (or the United States District Court, or the Arizona Superior Court) to enforce any award, that reaches or encumbers the assets or property of the Yavapai-Apache Nation other than those assets of Owner set aside under the Contract for the payment of funds to the CMAR for its services under the Contract up to but not exceeding the total of CMAR's earned but unpaid Fees as defined under the Contract, and only the assets of owner up to the limit of the CMAR's earned but unpaid Fees under the Contract shall be liable for the satisfaction of any such arbitration award; (4) it is acknowledged and agreed between owner and contractor that the Limited Waiver of Sovereign Immunity provided by this Paragraph SC-17.02 (J) shall extend only to disputes between the Owner and CMAR and shall apply only to an action by CMAR to arbitrate and enforce an arbitration award in favor of CMAR for any claim for breach of the Contract, and that this Limited Waiver shall therefore not extend to or be effective as to any claim or action against Owner by any party other than CMAR (including without limitation any purported third-party beneficiary of this Contract); and (5) Owner's liability for any recovery by CMAR by arbitration and enforcement as provided for hereunder shall be limited to actual unpaid

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contractual obligations (compensatory damages) and/or specific performance, and shall not in any case include general, consequential, incidental, special, indirect, punitive or any other damages, whether in tort or contract, all of which are hereby expressly declared to be outside of the scope of the Limited Waiver of Sovereign Immunity provided for under this Paragraph SC-17.02 (J). Owner's total liability to contractor for compensatory damages under any arbitration as provided for hereinabove shall in no case exceed earned but unpaid amounts owed by Owner to CMAR for the services provided by CMAR under the Contract up to but not exceeding the CMAR's earned but unpaid Fees under the Contract.

Notwithstanding any provision to the contrary in this Contract or in any law or regulation, neither Owner nor CMAR shall be liable for incidental, consequential, or indirect damages, including but not limited to attorneys' fees or lost profits. The entire liability of Owner for a breach under the terms of this Contract shall be limited to direct compensatory damages not to exceed the CMAR'S earned but unpaid fees under the Contract.

K. **Governing Law.** This agreement shall be construed in accordance with the laws of the Yavapai-Apache Nation, and, where applicable, the laws of the State of Arizona as limited by this paragraph. Arizona law shall apply, without giving effect to any conflicts of laws principles, only with regard to interpretation of this agreement where the laws of the Yavapai-Apache Nation are silent on such interpretation. The laws of the Yavapai-Apache Nation shall apply in all other instances.

ARTICLE 18—MISCELLANEOUS

SC-18.07 Controlling Law

Amend Paragraph 18.07.A to read as follows:

As provided under SC-17.02. (k), "Governing Law," this Agreement shall be construed in accordance with the laws of the Yavapai-Apache Nation, and, where applicable, the laws of the State of Arizona as limited by this paragraph. Arizona law shall apply, without giving effect to any conflicts of laws principles, only with regard to interpretation of this agreement where the laws of the Yavapai-Apache Nation are silent on such interpretation. The laws of the Yavapai-Apache Nation shall apply in all other instances.

SC-18.11 Tribal Sovereignty

Add the following new paragraph after Article 18.11:

Tribal Sovereignty

No provision of this Agreement will be construed by any of the signatories, or any court or tribunal of competent jurisdiction, including any arbitrator under SC-17.02, as abridging or limiting any sovereign powers of the Nation; affecting the trust-beneficiary relationship between the Secretary of the Interior, the Nation, and Indian Land Owner(s); or interfering with the government-to-government relationship between the United States and the Nation.

SC – 19. Add the following language immediately after Article 18:

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ARTICLE 19—FEDERAL REQUIREMENTS

SC-19.01 IHS Not a Party.

A. This Contract is expected to be funded in part with funds provided by the IHS. Neither the IHS, nor any of its departments, entities, or employees is a party to this contract.

B. IHS employees cannot represent the Owner and Owner's employees cannot represent the IHS.

SC-19.02 Contract Approval.

A. Approval by the IHS of the proposed Contract documents and costs is required before this contract is effective.

B. Approval by the IHS of proposed contract changes is required before they are effective.

SC-19.03 Conflict of Interest.

A. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest or other interest in or a tangible personal benefit from the Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

SC-19.04 **Yavapai-Apache Nation Tribal Employment Rights Office Code ("TERO")**

This Contract is subject to the Yavapai-Apache Nation Tribal Employment Rights Office Code (TERO). A copy of the TERO Code is included in the Exhibits to the Special Conditions and made a part of the Contract Documents. The Contractor (and its subcontractors, if any) agrees to fully comply with all requirements of the TERO Code. However, as provided under Section J2. Of the TERO Code, the TERO Compliance Fee *"shall not be assessed or collected from … Covered Employers with Covered Contracts that are primarily compensated (more than fifty percent (50%)) with tribal, federal or state governmental funds or nonprofit funds."* **The Owner acknowledges that under this Contract the Contractor will be compensated using tribal and/or federal funds and that therefore the Contractor (and its subcontractors) is not subject to payment of the TERO Compliance Fee.** Prior to issuance of a Notice to Proceed under this Contract, the Contractor shall meet with the Nation's TERO Officer and negotiate and enter into a Compliance Agreement as required under the Code. The Contractor acknowledges that under the Code the Contractor has the initial and primary responsibility to ensure that all of Contractor's Subcontractors comply with the Code. Upon Notice of Award and prior to issuance of the Notice to Proceed, the contractor will be required to submit a plan for compliance with the TERO Code. The Notice to Proceed will not be issued until the Owner has received and approved this plan.

For additional information on the TERO compliance requirements under this Agreement, the Contractor is advised to contact the TERO Officer, Larry Jackson Sr., at Phone (928) 567-1035, Mobil: (928)-301-6654.

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Business License. Contractor shall obtain and maintain a Business License from the Yavapai-Apache Nation, Office of the Treasurer/Finance Director, as required under Section 401 E of the Nation's Procurement Code. Contractor can obtain a copy of the Nation's Application for Business License from the Yavapai-Apache Nation Finance Department located in the Nation's Administration Building at 2400 West Datsi Street, Camp Verde, Arizona 86322. The Nation's Treasurer/Finance Director can be reached by phone at (928)-567-1006. The Contractor shall be responsible for completing the application and licensing process with the Nation. Prior to commencing work under this contract, Contractor shall provide Owner a copy of the Business License issued by the Nation.

SC-19.05 Small, Minority, and Women's Businesses

A. Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms. If Contractor intends to let any subcontracts for a portion of the work, Contractor must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps must include:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and

5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

SC-19.06 Anti-Kickback

A. Contractor shall comply with the Copeland Anti-Kickback Act (40 U.S.C 3145) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that Contractor or subcontractor must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. Owner shall report all suspected or reported violations to IHS.

SC-19.07 Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended

A. Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution

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Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

SC-19.08 Equal Employment Opportunity

A. The Contract is considered a federally assisted construction contract. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

SC-19.09 Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)

A. Contractors that apply or bid for an award exceeding $100,000 must file the required certification. The Contractor certifies to the Owner and every subcontractor certifies to the Contractor that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining the Contract if it is covered by 31 U.S.C. 1352. The Contractor and every subcontractor must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the Owner.

SC-19.10 Environmental Requirements. When constructing a Project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:

A. Waters of the U.S. –When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands or other Waters of the U.S.

B. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact or human remains shall be immediately reported to Owner and a representative of IHS. Construction shall be temporarily halted pending the notification process and further directions issued by IHS after consultation with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO).

C. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of IHS. Construction shall be temporarily halted pending the notification process and further directions issued by IHS after consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

D. [Deleted]

SC-19.11 Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)

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A. Where applicable, for contracts awarded by the Owner in excess of $100,000 that involve the employment of mechanics or laborers, the Contractor must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor must compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

SC-19.12 Debarment and Suspension (Executive Orders 12549 and 12689)

A. A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

SC-19.13 Davis – Bacon Act, as amended (40 U.S.C. 3141-3148)

A. If this contract is in excess of $2,000, the Contractor, and all sub-contractors, must comply with the requirements of the Davis – Bacon Act (40 U.S.C. 3141-3144 and 3146-3148) as implemented by Department of Labor regulations (29 CFR part 5). In accordance with the statute and its implementing regulations, the Contractor (and its subcontractors) must pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor must be required to pay wages not less than once a week. The Owner must place a copy of the current prevailing wage determination issued by the Department of Labor in the solicitation. The Owner's decision to award this contract or to approve the award by Contractor of any subcontract is conditioned upon the acceptance by Contractor and Subcontractor of the applicable wage determination included in the bid package. Contractor's execution of this Contract serves as Contractor'd acknowledgement of its obligations under the Davis Bacon Act. As required by Department of Labor regulations at 29 CFR Part 5, the Contract Provisions set out at 29 CFR §5.5 are hereby inserted in full and incorporated into this contract verbatim as required by 29 CFR §505(a). A copy of the Contract Provisions set out in 29 CFR §5.5 are hereby incorporated into this Contract as Exhibit D and are made a part of this Contract.

B. For this Contract, the applicable wage determination classification shall be Construction Type: Heavy for Yavapai County, Arizona. It shall be the Contractor's responsibility to verify and utilize the most current applicable wage determination, as published on SAM.gov, including any modifications or superseded determinations in effect at the time of bid opening and throughout the duration of the Work, as required by federal regulations.

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SC-19.14 [Deleted]

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WORK CHANGE DIRECTIVE NO.:

Owner: Yavapai-Apache Nation
Owner's Project No.: PH18-V24 PH20-V75 WA11-19
Engineer: Indian Health Service, Joel Garcia
Engineer's Project No.: PH18-V24 PH20-V75 WA11-19
Contractor:
Contractor's Project No.:
Project: PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements
Contract Name: PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements
Date Issued:
Effective Date of Work Change Directive:

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments:

Purpose for the Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

☐ Non-agreement on pricing of proposed change. ☐ Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: $ _____ **[increase] [decrease] [not yet estimated]**.

Contract Time: _____ days **[increase] [decrease] [not yet estimated]**.

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

	Recommended by Engineer	Authorized by Owner
By:		
Title:		
Date:		

EJCDC® C-940, Work Change Directive.
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CHANGE ORDER NO.:

Owner: Yavapai-Apache Nation
Owner's Project No.: PH18-V24 PH20-V75 WA11-19
Engineer: Indian Health Service, Joel Garcia
Engineer's Project No.: PH18-V24 PH20-V75 WA11-19
Contractor:
Contractor's Project No.:
Project: PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements
Contract Name: PH18-V24 PH20-V75 WA11-19 Clarkdale Water Improvements
Date Issued:
Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments:

Change in Contract Price	**Change in Contract Times [State Contract Times as either a specific date or a number of days]**
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. **[Number of previous Change Order]**: $ _____	**[Increase] [Decrease]** from previously approved Change Orders No.1 to No. **[Number of previous Change Order]**: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: $ _____	**[Increase] [Decrease]** this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)	Authorized by Owner
By: _____	_____
Title: _____	_____
Date: _____	_____
Authorized by Owner	Approved by Funding Agency (if applicable)
By: _____	_____
Title: _____	_____
Date: _____	_____

EJCDC® C-941, Change Order.
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EXHIBITS

TABLE OF CONTENTS

EXHIBIT A – YAVAPAI-APACHE NATION ARBITRATION CODE…….. 2

EXHIBIT B – YAVAPAI-APACHE NATION TERO CODE……. 7

EXHIBIT C – INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT FORM……. 20

EXHIBIT D – QUALIFICATIONS STATEMENT FORM…… 26

EXHIBIT E – CONTRACTOR'S BID…… 39

EXHIBIT F – DAVIS BACON CONTRACT PROVISIONS REQUIRED UNDER 29 CFR SECTION 5.5…… 41

EXHIBIT G – DAVIS BACON WAGE RATES…… 54

EXHIBIT H – TECHNICAL PROVISIONS/MODIFIED SPECS…….. 56

EXHIBIT I – PLAN SET…….. 143

EXHIBIT A – YAVAPAI-APACHE NATION ARBITRATION CODE

ORDINANCE NO. 19
YAVAPAI-APACHE NATION
ARBITRATION CODE

Section 1. Scope of Code.

This Code applies to any written contract, agreement or other instrument entered into by the Yavapai-Apache Nation (the "Tribe"), or any other person in a transaction that is subject to the jurisdiction of the Tribe, in which the parties thereto agree to settle by arbitration any claim, dispute or controversy arising out of such contract, agreement or other instrument. Any prior legislation or other Tribal laws which are inconsistent with the purpose and procedures established by this Code are hereby repealed to the extent of any such inconsistency.

Section 2. Agreements to Arbitrate are Enforceable.

An agreement in any written contract, agreement or other instrument, or in a separate writing executed by the parties to any written contract, agreement or other instrument, to settle by arbitration any claim, dispute or controversy thereafter arising out of such contract, agreement or other instrument, or any other transaction contemplated thereunder, including the failure or refusal to perform the whole or any part thereof, or a written agreement between two or more persons to submit to arbitration any claim, dispute or controversy existing between them at the time of the agreement, shall be valid, irrevocable and enforceable.

Section 3. Law to be Applied.

a. In any contract, agreement or instrument described in Section 1 of this Code, the parties may agree upon the jurisdiction whose substantive law shall govern the interpretation and enforcement of the contract, agreement, instrument or claim, dispute or controversy. Such choice of law shall be valid and enforceable, and not subject to revocation by one party without the consent of the other party or parties thereto, provided that the subject matter of the contract, agreement, instrument or claim, dispute or controversy, or at least one of the parties thereto, shall have some contact with the jurisdiction so selected.

b. In any proceeding under this Code, whenever the contract, agreement or other instrument sets forth a choice of law provision, the Yavapai-Apache Tribal Court shall apply the procedural rules of the Tribal Court and the substantive law of the jurisdiction selected in such choice of law provision; provided that no procedural rule of the Tribal Court shall bar, delay or impair any action, proceeding or remedy where such action, proceeding or remedy

would not be barred, delayed or impaired by the procedural rules of the courts of the jurisdiction whose substantive law applies.

c. In any proceeding under this Code, whenever the contract, agreement or other instrument does not set forth a choice of law provision, the Tribal Court shall first apply the substantive law of the Tribe, including any applicable choice of law principles, and then the substantive law of the State of Arizona, including any applicable choice of law principles, provided that such law does not conflict with this Code or other applicable tribal law.

Section 4. Stay of Proceedings and Order to Proceed with Arbitration.

a. If any action for legal or equitable relief or other proceeding is brought by any party to any contract, agreement or instrument described in Section 1 of this Code, the Tribal Court Judge who is presiding over the pending action or proceeding shall not review the merits of the pending action or proceeding, but shall stay the action or proceeding until an arbitration has been had in compliance with the agreement.

b. A party to any contract, agreement or instrument described in Section 1 of this Code claiming the neglect or refusal of another party thereto to proceed with an arbitration thereunder may make application to the Tribal Court for an order directing the parties to proceed with the arbitration in compliance with their agreement. In such event, the Tribal Court shall order the parties to arbitration in accordance with the provisions of the contract, agreement or instrument and the question of whether an obligation to arbitrate the dispute at issue exists shall be decided by the arbitrator(s).

Section 5. Advice of the Court.

At any time during an arbitration, upon request of all the parties to the arbitration, the arbitrator(s) may make application to the Tribal Court for advice on any question of tribal or state law arising in the course of the arbitration so long as such parties agree in writing that the advice of the Court shall be final as to the question presented and that it shall bind the arbitrator(s) in rendering any award.

Section 6. Time Within Which Award Shall be Rendered.

a. If the time within which an award is rendered has not been fixed in the arbitration agreement, the arbitrator(s) shall render the award within thirty days from the date the arbitration has been completed. The parties may expressly agree to extend the time in which the award may be made by an extension or ratification thereof in writing.

b. An arbitration award shall be in writing and signed by the arbitrator(s). The arbitrator(s) shall provide written notice of the award to each party by certified or registered mail, return receipt requested.

Section 7. Application for Order Confirming Award; Record to be Filed with Clerk of Court; Effect and Enforcement of Judgment.

a. At any time within one year after an arbitration award has been rendered and the parties thereto notified thereof, any party to the arbitration may make application to the Tribal Court for an order confirming the award.

b. Any party applying for an order confirming an arbitration award shall, at the time the order is filed with the Clerk of the Tribal Court for entry of judgment thereon, file the following papers with the Clerk: (1) the agreement to arbitrate; (2) the selection or appointment, if any, of the arbitrator(s); (3) any written agreement requiring the reference of any question as provided in Section 5; (4) each written extension of the time, if any, within which to make the award; (5) the award; (6) each notice and other paper used upon an application to confirm; and (7) a copy of each order of the Tribal Court upon such an application.

c. An arbitration award shall not be subject to review or modification by the Tribal Court, but shall be confirmed strictly as provided by the arbitrator(s); provided, however, that the Tribal Court shall decline to enforce any arbitration award if it finds (i) the award was procured by corruption, fraud or other undue means, (ii) there was evident paritiality of an arbitrator appointed as a neutral, (iii) the arbitrator(s) exceeded their powers, or (iv) the arbitrators refused to hear evidence material to the controversy or otherwise conducted the hearing so as to substantially prejudice the rights of one party. The judgment confirming an award shall be docketed as if it were rendered in a civil action. The judgment so entered shall have the same force and effect in all respects as, and be subject to all the provisions of law relating to, a judgment in a civil action, and it may be enforced as if it has been rendered in a civil action in the Tribal Court. When the award requires the performance of any other act than the payment of money, the Tribal Court may direct the enforcement thereon in the manner provided by law.

Section 8. Arbitration Award Not Appealable.

No further appeal may be taken from an order issued by the Tribal Court pursuant to this Code enforcing an agreement to arbitrate or an award issued by an arbitrator.

Section 9. Jurisdiction of the Tribal Court in Actions to which the Tribe is a Party.

a. The Tribal Court shall have jurisdiction over any action to enforce an agreement to arbitrate, to compel arbitration pursuant to such an agreement to arbitrate and to enforce an award made by an arbitrator pursuant to such agreement to arbitrate, contained in any contract, agreement or other instrument described in Section 1 of this Code to which the Tribe is a party; provided that in any such actions brought against the Tribe, the Tribal Council (the "Council") shall have explicitly waived the defense of tribal sovereign immunity in the contract, agreement or other instrument; and provided further that such contract, agreement, or other instrument does not expressly prohibit the Tribal Court from exercising jurisdiction thereunder.

b. To the extent allowed by federal law, the jurisdiction of the Tribal Court under this Code shall be concurrent with the jurisdiction of any state or federal court to the jurisdiction of which the Council shall have explicitly consented in such contract, agreement or other instrument. Any consent to the jurisdiction of a state or federal court contained in a contract, agreement or other instrument described in Section 1 of this Code to which the Tribe is a party shall be valid and enforceable in accordance with its terms.

Section 10. Severability.

If any section or part thereof of this Code or the application thereof to any party shall be held invalid for any reason whatsoever by a court of competent jurisdiction or by federal legislative action, the remainder of the relevant section or part of this Code shall not be affected thereby and shall remain in full force and effect.

Section 11. No Waiver of Sovereign Immunity.

Nothing in this Code shall be interpreted to provide a waiver of the sovereign immunity of the Tribe or any of its officers, employees or agents acting within the scope of their authority.

EXHIBIT B – YAVAPAI-APACHE NATION TERO CODE

TITLE 22
YAVAPAI-APACHE NATION
TRIBAL EMPLOYMENT RIGHTS OFFICE CODE

TABLE OF CONTENTS

CHAPTER I	GENERAL PROVISIONS	1
Section A	Title	1
Section B	Purpose	1
Section C	Statement of Policy	1
Section D	Definitions	1
CHAPTER II	TRIBAL EMPLOYMENT RIGHTS OFFICE	3
Section A	TERO Office	3
Section B	TERO Officer/Duties and Responsibilities	3
CHAPTER III	TRIBAL EMPLOYMENT RIGHTS PROGRAM	4
Section A	Scope	4
Section B	Compliance Agreement	5
Section C	Job Qualifications and Personnel Requirements	5
Section D	TERO Skills Bank	5
Section E	Training	6
Section F	Unions	6
Section G	Contractors and Subcontractors	6
Section H	Preference in Contracting and Subcontracting	6
Section I	Promotions and Layoffs	7
Section J	TERO Compliance Fees	7
Section K	On-Site Inspections	8
Section L	Tribal Preference	8
CHAPTER IV	ENFORCEMENT PROCEDURES	8
Section A	Investigation by the TERO Officer	8
Section B	Informal Settlement/Voluntary Compliance	8
Section C	Issuance of Written Warnings/Citations	9
Section D	TERO Officer Hearing	9
Section E	Emergency Relief	9
Section F	Appeals	10
CHAPTER V	PENALTIES	10
Section A	Penalties for Violation	10
Section B	Monetary Fines	10
Section C	Enforcement	10
CHAPTER VI	JUDICIAL REVIEW	11

Adopted on 11/8/2007 by Resolution No. 122-07, as amended on 10/3/2013 by Resolution No. 173-13, 3/9/2017 by Resolution No. 42-17, 9/28/2023 by Resolution No. 161-23, and 10/26/23 by Resolution No. 173-23.

CHAPTER I. GENERAL PROVISIONS

SECTION A. TITLE

This Code shall be known as the Yavapai-Apache Nation Tribal Employment Rights Code.

SECTION B. PURPOSE

The Yavapai-Apache Nation as a sovereign has the right to regulate employment opportunities on and near its land. This right is protected through this Code.

The purposes of this Code are:

1. To ensure compliance by Covered Employers on and near the Yavapai-Apache Lands with federal and tribal laws that are intended to prevent employment related discrimination against American Indians;

2. To ensure compliance by Covered Employers on the Yavapai-Apache Lands with federal and tribal laws that are intended to give preference and priority in employment, contracting and sub-contracting, and training to American Indians; and

3. To ensure the maximum utilization of American Indian workers in all employment opportunities on and near the Yavapai-Apache Lands.

Use of the term "on and near" the Yavapai-Apache Lands shall be construed to permit Indian preference to the fullest extent permitted under tribal and federal law.

SECTION C. STATEMENT OF POLICY

The Tribal Council of the Yavapai-Apache Nation finds that:

1. Jobs in the private employment sector on and near the Yavapai-Apache Lands are an important resource for Indians residing on and near the Yavapai-Apache Lands and trust lands of the Yavapai-Apache Nation.

2. This Code is consistent with and supplemental to existing federal and tribal law prohibiting employment discrimination against Indians and providing for employment and contract preference to Indian employees and Indian-owned enterprises.

3. Indian unemployment on the Yavapai-Apache Nation continues to be a problem of sufficient magnitude to warrant the enactment and implementation of this Code which is designed to improve employment opportunities for Indians living on and near the Yavapai-Apache Lands and trust lands of the Yavapai- Apache Nation.

SECTION D. DEFINITIONS

1. CODE means the Tribal Employment Rights Office Code of the Yavapai-Apache Nation.

2. COMPLIANCE AGREEMENT means a written agreement signed by Covered Employers and the Tribal Employment Rights Office in accordance with this Code.

3. COMPLIANCE FEE means a fee approved by the Yavapai- Apache Tribal Council, which fee shall be paid by the Covered Employer prior to commencing work on the Yavapai-Apache Nation Lands.

4. CORE CREW means the essential, permanent employees of a contractor who hold a high level supervisory position or perform a critical function such that the contractor would risk likely financial damage or loss if that employee's task(s) were assigned to a person unknown to the contractor. Core crew members cannot be laborers.

5. COUNCIL means the Yavapai-Apache Tribal Council.

6. COVERED EMPLOYER means any entity employing two (2) or more persons, who during any thirty (30) day consecutive period spend cumulatively forty (40) or more hours performing work within the jurisdiction of the Yavapai-Apache Nation.

7. ENTITY means any person, partnership, corporation, limited liability company, joint venture or any other natural or artificial person or organization.

8. INDIAN (or AMERICAN INDIAN) means any person enrolled in a federally recognized tribe and recognized by the United States pursuant to its trust responsibility to American Indians.

9. INDIAN OWNED BUSINESS means a firm or business that is certified by the TERO Office as eligible for Indian preference under this Code, provided that Indians hold at least fifty percent (50%) ownership interest in such firm or business and exercise majority management control.

10. INDIAN PREFERENCE means a preference for Indians, who meet the minimal qualifications for a position, in all aspects of employment, including but not limited to: hiring, training, promotions, layoffs, terminations, contracting and subcontracting for work within the Yavapai-Apache Nation Lands. Qualified, available Indians shall receive Indian preference according to negotiated Compliance Agreements.

11. LOCATED ON THE YAVAPAI-APACHE LANDS means a Covered Employer, if during any portion of a business enterprise or specific contract or subcontract, maintaining a temporary or permanent office or facility on the Yavapai-Apache lands.

12. NEAR THE YAVAPAI-APACHE LANDS means within reasonable daily commuting distance of Yavapai-Apache Nation lands.

13. SKILLS BANK means a tribal hiring hall that maintains a record of qualified, employable Tribal Members and other American Indians that is to be used by Covered Employers to fill vacancies.

14. TERO means the Yavapai-Apache Nation Tribal Employment Rights Office Code.

15. TERO OFFICE means the Yavapai-Apache Nation Tribal Employment Rights Office or other office or department designated by the Council as such to act as and perform the function of TERO from time to time.

16. TERO OFFICER means the individual, committee or department appointed by the Council from time to time to administer the TERO as set forth herein. The Council may appoint and remove the TERO Officer by Council Resolution.

17. TRIBAL MEMBERS means those persons enrolled in the Yavapai-Apache Nation.

18. TRIBAL PREFERENCE means a preference for Tribal Members who meet the minimal qualifications for a position, in all aspects of employment, including but not limited to hiring, training, promotion, layoffs, terminations, contracting and subcontracting, for work within the Yavapai-Apache Nation Lands. Qualified, available Tribal Members shall receive Tribal Preference, where allowed by law, according to negotiated Compliance Agreements.

19. TRIBAL COURT means the Yavapai-Apache Nation Tribal Court as established in the Yavapai- Apache Code, Chapter 3 Court Code.

20. YAVAPAI-APACHE LANDS means all lands within the territorial jurisdiction of the Yavapai- Apache Nation as that term is defined in Article I of the Nation's Constitution.

CHAPTER II. TRIBAL EMPLOYMENT RIGHTS OFFICE

SECTION A. TERO OFFICE

The Nation has established a TERO Office to implement the provisions of this Code. The TERO Office shall have such staff as is necessary to operate the TERO Office.

The TERO Office shall be subject to an annual budget approved by the Council each fiscal year.

SECTION B. TERO OFFICER/DUTIES AND RESPONSIBILITIES

The Nation has delegated primary responsibility for running the TERO Office to the TERO Officer who shall be responsible for administering and ensuring compliance with the provisions of this Code. The TERO Officer shall report to the Human Resources Director of the Nation, or such other person as the Council shall direct.

The TERO Officer shall have the authority to:

1. Negotiate Compliance Agreements with Covered Employers before allowing such Covered Employers to commence work within the jurisdiction of the Nation;

2. Take on-site visits and investigate potential violations of this Code;

3. Impose penalties, within limits or schedules approved by the Council, on Covered Employers who violate the provisions of the Code;

4. Develop and promulgate regulations necessary to implement the provisions of this Code, subject to approval of the Council;

5. Develop and impose numerical hiring goals and timetables that reflect the available American Indian labor pool and other employment opportunities for each craft and skill category;

6. Require Covered Employers that have established training or apprentice programs to provide preference to American Indians or Tribal Members, as applicable;

7. Establish and maintain a tribal hiring hall that maintains a record of qualified, employable Tribal Members and other American Indians that is to be used by Covered Employers to fill vacancies;

8. Prohibit any Covered Employer from imposing employment qualification criteria that serve as barriers to American Indian employment unless the Covered Employer can demonstrate that such criteria are required by business necessity;

9. Work cooperatively with other tribal programs, i.e. job training programs, to establish counseling and support programs for Tribal Members workers to assist them in retaining employment;

10. Enter into cooperative agreements with federal and state agencies to minimize employment discrimination on the Yavapai-Apache Lands, to promote American Indian Preference in hiring, training, and contracting and to otherwise ensure compliance with this Code;

11. To obtain from Covered Employers subject to this Code certified payroll reports ("Certified Payroll Reports") that contain information relevant to the TERO Officer's enforcement authority herein.

12. To assess fees on Covered Employers, subject to the limits or schedules set forth in this Code or approved by the Council, to support the operations of the Tribal Employment Rights Office, including the authority to inquire about and obtain information necessary to make a determination on the source of funding for Covered Contracts as provided in Chapter III, Section J of this Code;

13. To carry out the day-to-day operations of the TERO, to enforce this Code and such other authority as is necessary to the efficient administration of this Code.

The TERO Officer shall not have the authority to waive sovereign immunity on behalf of the Yavapai-Apache Nation or any Yavapai-Apache Nation departments or entities.

All acts taken by the TERO Officer, the Nation, the Tribal Council, or any employee in furtherance of this Ordinance are taken in their official capacities.

CHAPTER III. TRIBAL EMPLOYMENT RIGHTS PROGRAM

SECTION A. SCOPE

All Covered Employers shall give preference to American Indians in hiring, promotion, training, and all other aspects of employment, contracting and subcontracting, and business opportunities, and shall comply with the terms of this Code and its implementing regulations and any Compliance Agreement(s) executed under this Code.

SECTION B. COMPLIANCE AGREEMENT

Each Covered Employer shall be required to meet with the TERO Officer at the TERO Office and negotiate and execute a "Compliance Agreement" which sets forth the Covered Employer's goals and objectives under this TERO Code. At a minimum, Compliance Agreements will include periodic reporting requirements and shall be reviewed annually and revised as necessary.

With respect to contractors and subcontractors, a list of proposed Core Crew members and their titles and responsibilities shall be provided and periodically reviewed and revised as necessary.

Every Compliance Agreement shall incorporate numerical goals based upon the TERO Officer's surveys of the available American Indian work force and of applicable projected employment opportunities on the Yavapai-Apache Lands.

No Covered Employer who intends to engage in temporary business on the Yavapai-Apache Lands shall commence work until a Compliance Agreement has been negotiated and signed by both the TERO Officer and the Covered Employer or Covered Employer's representative. A Covered Employer who has established a permanent place of business on the Yavapai-Apache Lands shall negotiate and execute a Compliance Agreement within thirty (30) days from the date the Covered Employer receives notification from the TERO Officer that a Compliance Agreement is required.

Any violation of an executed Compliance Agreement shall be a violation of this Code.

SECTION C. JOB QUALIFICATIONS AND PERSONNEL REQUIREMENTS

A Covered Employer shall not use qualification criteria or other personnel requirements that serve as barriers to American Indian employment unless the Covered Employer is able to demonstrate that such criteria or requirements are required by business necessity. EEOC Guidelines shall be adopted on these matters to the extent that they are appropriate. The TERO Officer shall be guided by the guidelines but shall have the authority to impose additional requirements that are necessary in order to address employment barriers that are unique to American Indians.

Any Covered Employer who has a drug/alcohol policy may impose such requirements on employees referred by the TERO Office to the extent such requirements do not conflict with any Yavapai-Apache Nation tribal laws, regulations, or policies or procedures.

SECTION D. TERO SKILLS BANK

1. The TERO Officer shall establish and maintain a TERO Skills Bank to assist Covered Employers in placing qualified American Indians in job positions.

2. A Covered Employer shall not hire a non-American Indian in violation of the Compliance Agreement until the TERO Officer has certified within a reasonable time that no qualified American Indian is available to fill the vacancy. For purposes of this section, "reasonable time" shall be defined as follows:

    (a) Construction jobs-the TERO Officer shall have forty-eight (48) hours from time of notice of manpower needs, to refer a qualified American Indian from the TERO Skills Bank;

(b) All other employment-the TERO Officer shall have five (5) working days to refer a qualified American Indian from the TERO Skills Bank.

The TERO Officer may grant a waiver of a time period upon a showing by the Covered Employer that such time period imposes an undue burden upon the Covered Employer or his business.

SECTION E. TRAINING

1. The TERO Officer shall identify training programs necessary in order to increase the pool of qualified American Indians for employment on the Yavapai-Apache Lands.

2. The TERO Officer may seek out grants for the purposes of establishing training programs to assist American Indians in acquiring skills for employment.

3. The TERO Officer may initiate and sponsor training programs for Covered Employers to participate in, or the TERO Officer may work with Covered Employers to establish and sponsor their own training programs to assist American Indians to become qualified in the various job classifications used by Covered Employers.

SECTION F. UNIONS

Covered Employers with collective bargaining agreements with a union are responsible for informing such unions of this Code and TERO rules and regulations. Unions will give absolute preference to American Indians in job referrals regardless of which referral list they are on. Temporary Work Permits will be granted American Indians who do not wish to join a union. Nothing herein shall constitute official tribal recognition of any union or tribal endorsement of any union activities on the Yavapai-Apache Lands.

SECTION G. CONTRACTORS AND SUBCONTRACTORS

The Indian Preference requirements contained herein shall apply to all contractors and subcontractors of a Covered Employer. The Covered Employer shall have the initial and primary responsibility for ensuring that all contractors and subcontractors comply with these requirements and both the Covered Employer and his contractors and subcontractors shall be subject to the penalties set forth herein for failure to comply with the Code requirements.

SECTION H. PREFERENCE IN CONTRACTING AND SUBCONTRACTING

Irrespective of the qualifications of any non-Indian contractor or subcontractor, any American Indian contractor or subcontractor who demonstrates the minimum qualifications to perform a contract on the Yavapai-Apache lands and is certified by the TERO Office shall be given preference by the entity awarding such contract or subcontract by using the following priorities subject to federal laws:

1. Certified Yavapai-Apache firms whose principal place of business is located on the Yavapai-Apache Lands;

2. Certified Yavapai-Apache firms whose principal place of business is not located on the Yavapai- Apache Lands;

3. Certified American Indian owned firms;

4. Non-certified firms with some American Indian ownership;

5. All other firms.

The TERO Officer shall maintain a list of American Indian-owned businesses which list shall be supplied to the Covered Employers upon request.

SECTION I. PROMOTIONS AND LAYOFFS

Each Covered Employer shall to the extent permitted under federal law, give American Indians preferential consideration for all promotion opportunities and shall encourage American Indians to seek such opportunities.

In all layoffs and reductions in force, no American Indian worker shall be terminated if a non-American Indian worker in the same job classification is still employed. The non-American Indian shall be terminated first if the American Indian possesses threshold qualifications for the job classification. If a Covered Employer lays off workers by crew, all qualified American Indian workers shall be transferred to crews to be retained so long as non-American Indians in the same job classification are employed elsewhere on the job site. Exceptions may be non-American Indians hired as "Core Crew", according to negotiated Compliance Agreements.

SECTION J. TERO COMPLIANCE FEES

The TERO Officer shall assess and collect a Compliance Fee based upon the following schedule.

1. Except as provided below, every contractor with a Covered Contract shall pay a Compliance Fee approved by the Yavapai- Apache Tribal Council, which Compliance Fee shall be paid by the Covered Employer prior to commencing work on the Yavapai-Apache Nation Lands. As of date of this Ordinance, the Compliance Fee is equal to three percent (3%) of the total amount of the contract and Covered Contracts are those that are in the sum of ten thousand dollars ($10,000) or more.

2. The Compliance Fee shall not be assessed or collected from educational organizations, recognized religious organizations, health organizations, governments, governmental departments or entities, utilities franchised by the Yavapai-Apache Nation, non-profit organizations as owners of projects on Yavapai-Apache Lands, or from Covered Employers with Covered Contracts that are primarily compensated (more than fifty percent (50%)) with tribal, federal or state governmental funds or nonprofit funds. In no event shall Compliance Fees be assessed against the Yavapai-Apache Nation, Yavapai-Apache Nation departments or entities, or Yavapai-Apache Nation enrolled Tribal Members as owners of projects on Yavapai-Apache Lands.

3. Except as otherwise directed in the budgets approved by the Yavapai-Apache Tribal Council, Compliance Fees shall be used for the TERO operating budget, and the percentage may be adjusted by the Tribal Council as often as annually to remain relatively consistent with the national average.

4. The TERO Officer shall receive a copy of each Compliance Fee payment. The TERO Officer shall be responsible for collecting the fees and may establish such regulations as are necessary to ensure a fair and timely fee collection process.

SECTION K. ON SITE INSPECTIONS

The TERO Officer shall have the authority to make on-site inspections during regular working hours in order to monitor a Covered Employer's adherence to the terms of this Code and the Covered Employer's Compliance Agreement. The TERO Officer shall have the right to inspect and copy all relevant records of a Covered Employer, of any signatory union, or subcontractor of a Covered Employer, and shall have the right to speak to workers and to conduct an investigation on the job site. All information collected by the TERO Officer shall be kept confidential unless disclosure is necessary or ordered as part of any federal or tribal judicial or administrative proceeding.

SECTION L. TRIBAL PREFERENCE

Tribal preference is a form of Indian Preference which gives special preference in employment to members of the Nation. Tribal preference is permitted by the sovereign power of the Yavapai-Apache Nation, except where specifically prohibited by federal law. The order of Tribal preference is:

1. Enrolled members of the Yavapai-Apache Nation
2. Enrolled members of other federally recognized Native American Tribes
3. All others

Anyone claiming Tribal preference must show a valid Tribal Identification Card.

CHAPTER IV. ENFORCEMENT PROCEDURES

SECTION A. INVESTIGATION BY THE TERO OFFICER

Any person who believes that a Covered Employer has failed to comply with the Code, or who believes that a person has been discriminated against by a Covered Employer because he/she is an American Indian, may file a complaint with the TERO Office. The complainant shall be responsible for providing the TERO Office with evidence of the discrimination practices. Upon receipt of a complainant, the TERO Officer shall conduct a prompt and thorough investigation of the charge. The TERO Officer may also initiate an investigation when the Officer has cause to believe a violation has occurred.

SECTION B. INFORMAL SETTLEMENT/VOLUNTARY COMPLIANCE

Upon establishing that there are reasonable grounds to support the claim, the TERO Officer shall attempt to achieve an informal settlement of the matter.

The TERO Officer shall document the settlement in the Covered Employer's file and provide a copy to all parties.

SECTION C. ISSUANCE OF WRITTEN WARNINGS/CITATIONS

1. If an informal settlement cannot be achieved, the TERO Officer shall issue a written warning to the Covered Employer. This warning shall specify the nature of the violation and direct that the violation be corrected within three (3) business days or sooner where warranted.

2. If the violation is not corrected within the time specified, the TERO Officer shall issue a citation to the Covered Employer which shall:

   (a) Be in writing and in the name of the Yavapai-Apache Nation;

   (b) State the name of the violator;

   (c) Bear the signature of the TERO Officer or his authorized representative;

   (d) Identity the specific provisions of this TERO Code or Compliance Agreement which has been violated;

   (e) State a brief summary of facts constituting the violation; and

   (f) State a time and place the Covered Employer must appear to answer to the violation at the TERO Officer Hearing.

SECTION D. TERO OFFICER HEARING

The Covered Employer shall be entitled to a hearing before the TERO Officer no later than ten (10) working days after receipt of a citation. Hearing procedures shall comply with the requirements of due process, but will not be bound by the formal rules of evidence. The Covered Employer shall be entitled to present evidence and to call witnesses to demonstrate that the Covered Employer has complied with the requirements of this Code or that the Covered Employer made a best effort to do so and therefore should not be subject to penalties. On the basis of evidence presented at the hearing and the information collected by the Office, the TERO Officer shall determine whether or not the Covered Employer complied with this Code. If the TERO Officer determined that the Covered Employer is out of compliance and has not made a best effort to comply, the TERO Officer shall impose one or more of the penalties provided for in the Code, as appropriate and shall order the Covered Employer to take such corrective action as necessary to remedy any harm done to the Tribe or individual American Indians by the Covered Employer's non-compliance. The TERO Officer shall send written notice to all parties within ten (10) days after his/her decision in the matter.

SECTION E. EMERGENCY RELIEF

When the TERO Officer determines that a violation has occurred that is of a critical nature requiring immediate remedial action, the TERO Officer may issue a citation without delay, stating penalties to be placed on a Covered Employer.

SECTION F. APPEALS

Any person or entity adversely affected by a decision of the TERO Officer shall have the right to appeal the decision to the Yavapai-Apache Tribal Court in accordance with Chapter VI. of this Code.

CHAPTER V. PENALTIES

SECTION A. PENALTIES FOR VIOLATION

Any Covered Employer who violates this Code or a Compliance Agreement negotiated hereunder shall be subject to penalties including, but not limited to:

1. Denial of the right to commence or continue business on the Yavapai-Apache Lands;

2. Suspension of operations on the Yavapai-Apache Lands;

3. Payment of back pay and/or damages to compensate any injured party;

4. An order to summarily remove employees hired in violation of this Code or Compliance Agreement negotiated hereunder;

5. Imposition of monetary civil penalties; and

6. An order specifying requirements for employment, promotion and training Indians injured by the violation.

SECTION B. MONETARY FINES

The maximum monetary penalty that may be imposed for each violation shall be established and may be changed, by the Yavapai-Apache Tribal Council. As of the date of this Ordinance, the maximum monetary penalty per violation is established at five hundred dollars ($500). For purposes of the imposition of penalties determined by the TERO Officer, each day during which a violation exists shall constitute a separate violation.

SECTION C. ENFORCEMENT

1. The TERO Officer shall be entitled to pursue the enforcement of any Order through the Yavapai-Apache Tribal Court or any other court of competent jurisdiction when necessary to collect penalties or to ensure compliance with the terms and conditions of any order issued by the TERO Officer, the Yavapai-Apache Nation Tribal Court, or any other court of competent jurisdiction.

2. Any cost associated with the enforcement of such Order issued pursuant to this Code shall be assessed on the Covered Employer that is out of compliance. These may include, but are not limited to: document reproduction costs, filing fees, attorney fees and costs incurred by TERO staff related to securing enforcement of the Order.

3. Covered Employers that do not comply with the provisions of this Code and leave the Lands before enforcement penalties or an order by the TERO Officer or the Yavapai-

Apache Nation Tribal Court, shall, in addition to all other remedies at law or in equity, be denied the right of contracting or doing further business on the Yavapai-Apache Lands.

4. The Compliance Agreement shall confirm the Covered Employer's consent to jurisdiction within the Nation as provided herein. The TERO Officer, without waiving remedies or jurisdictional rights hereunder, may also elect to enforce an Order, award, or any provision of this Ordinance, in any court of competent jurisdiction where a defendant may be found.

CHAPTER VI. JUDICIAL REVIEW

Any party dissatisfied with the decision of the TERO Officer may seek judicial review in the Yavapai-Apache Tribal Court. The Court shall uphold the decision of the TERO Officer unless such decision is arbitrary, capricious or in clear violation of existing law.

The Yavapai-Apache Tribal Court is hereby granted exclusive jurisdiction to hear, review and decide any issues regarding implementation, interpretation or enforcement appeals under this Code. The decision of the Tribal Court shall be final and binding.

EXHIBIT C – INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT FORM

INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT

The undersigned certifies under oath the truth and correctness of all answers to questions made hereinafter:

1. Name of Enterprise: _____

   Address: _____

   _____

   Telephone #: _____

2. Check One:

   _____ Corporation _____ Joint Venture

   _____ Partnership _____ Other: _____

   _____ Sole Proprietorship _____

3. Answer the Following:

   If a Corporation:

   a. Date of Incorporation: _____

   b. State of Incorporation: _____

   c. Name & Address of Statutory Agent: _____

   _____

   d. Give the names and address of the officers and members of the Board of Directors of this Corporation and establish whether they are Indian (I) or Non-Indian (NI).

Name & Social Security	I or NI	Title	Address	% of Stock Ownership
		President		
#				
		Vice-President		
#				
		Sec/Clerk		
#				
		Treasurer		
#				
#				

e. Complete the following information on all stockholders who are not listed in d. above, owning 5% or more of the stock. Establish whether they are Indian (I) or Non-Indian (NI).

Name & Social Security	I or NI	Title	Address	% of Stock Ownership
#				
#				
#				
#				
#				

If a Sole Proprietorship or Partnership:

a. Date of Organization: _____

b. Give the following information on the individual or partners and establish whether they are Indian (I) or Non-Indian (NI).

Name & Social Security	I or NI	Title	Address	% of Stock Ownership
#				
#				
#				

If a Joint Venture:

a. Date of Joint Venture Agreement: _____

b. Attach the information for each member of the joint venture prepared in the appropriate format given above.

4. Give the name, address, and telephone number of the principal spokesperson of your organization: _____

5. Has this enterprise been certified as an Indian Owned Economic Enterprise by any government or Tribal agency to qualify for special consideration under Indian preference contract clauses, or been awarded contracts by any government or Tribal agency based on Indian preference consideration?

_____ Yes _____ No

If yes, complete:

Contract Date	Contracting Agency	Contract No.	Location of Work

6. Will any officer or partner listed in #3 be engaged in outside employment?

_____ Yes _____ No

If yes, complete:

Name	Description of Outside Employment	Hours/Week

7. Does this enterprise have any subsidiaries or affiliates or is it a subsidiary or affiliate of another concern?

_____ Yes _____ No

If yes, complete:

Name & Address of Subsidiary, Affiliate or Other Concern	Description of Relationship

8. Does this enterprise or any person listed in #3 above have or intend to enter into any type of agreement with any other concern or person which relates to or affects the on-going administration, management or operations of this enterprise? These include but are not limited to management, and joint venture agreements and any arrangement or contract involving the provision of such compensated services as administrative assistance, data processing, management consulting of all types, marketing, purchasing, production and other types of compensated assistance.

_____ Yes _____ No

If yes, attach a copy of any written agreement or an explanation of any oral or intended agreement.

9. Attach certification by a Tribe or other evidence of enrollment in a federally recognized Tribe for each officer, partner, or individual designated as an Indian in #3.
10. Attach a certified copy of the charter, articles of incorporation, by-laws, partnership agreement, joint venture agreement and/or other pertinent organizational documentation.
11. Explain in narrative form the stock ownership, structure, management, control, financing, and salary or profit sharing arrangements of the enterprise, if not covered in answers to specific questions heretofore. Attach copies of all shareholder agreements, including voting trust, employment contracts, agreements between owners and enterprise. Include information on salaries, fees, profit sharing, material purchase, and equipment lease or purchase arrangements. Evidence relating to structure, management, control, and financing should be specifically included. Also, list the specific management responsibilities of each principal, sole proprietor, partner, or party to a joint venture (as appropriate) listed in response to #3.

NOTES:

I. Omission of any information may be cause for rejection of claim for Indian Preference.
II. The persons signing below certify that all information in this INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT, including exhibits and attachments, is true and correct.
III. Print and type name below all signatures.

If applicant is Sole Proprietor, Sign Below:

Name	Date

If applicant is in a Partnership or Joint Venture, all Partners must sign below:

Name	Date
Name	Date

If applicant is a corporation, affix corporate seal:

Corporate Seal	Date

By: _____
President's Signature

Attested by: _____
Corporate Secretary's Signature

WARNING: U.S. Criminal Code, Section 1010, Title 18, U.S.C. provides in part:
"Whoever…makes, passes, utters, or publishes any statement, knowing the same to be false…shall be fined not more than $5000 or imprisoned not more than two years, or both."

EXHIBIT D – QUALIFICATIONS STATEMENT FORM

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:			
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?	☐ Yes ☐ No ☐ Pending		

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

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1.04 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise		
☐ Minority Business Enterprise		
☐ Woman-Owned Business Enterprise		
☐ Small Business Enterprise		
☐ Disabled Business Enterprise		
☐ Veteran-Owned Business Enterprise		
☐ Service-Disabled Veteran-Owned Business		
☐ HUBZone Business (Historically Underutilized) Business		
☐ Other		
☐ None		

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ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business's financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:		
Business address:		
Date of Business's most recent financial statement:		☐ Attached
Date of Business's most recent audited financial statement:		☐ Attached
Financial indicators from the most recent financial statement		
Contractor's Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor's Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		

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ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	☐ Yes ☐ No		
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? ☐ Yes ☐ No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		☐ Yes ☐ No	
Does provider have an A.M. Best Rating of A-VII or better?		☐ Yes ☐ No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

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ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No				
Provide full details in a separate attachment if the response to any of these questions is Yes.				

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

8.05 List all projects performed for Tribal Governments in the past 10 years in Schedule C. If the contractor has never completed work for a Tribal government, a letter by the president/CEO of the company stating this must be provided in lieu of the list.

8.06 In Schedule D, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule D. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.

B. Diverse Business Certifications if required by Paragraph 3.01.

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C. Certification of Business's safety performance if required by Paragraph 4.02.

D. Financial statements as required by Paragraph 5.01.

E. Attachments providing additional information as required by Paragraph 8.02.

F. Schedule A (Current Projects) as required by Paragraph 8.03.

G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.

H. Schedule C (Projects for Tribal Governments) as required by Paragraph 8.05.

I. Schedule D (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.06.

J. Additional items as pertinent.

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This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

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Schedule A—Current Projects (add additional pages as necessary)

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule B—Previous Experience with Similar Projects (add additional pages as necessary)

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule C—Projects for Tribal Governments (add additional pages as necessary)

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule D—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

EJCDC® C-451, Qualifications Statement—Schedule D—Key Individuals.
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Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

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EXHIBIT E – CONTRACTOR'S BID

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization/Demobilization	LS	1		$
2	Water Main Line, 8"	LF	4912		$
3	Water Service Line, 1" HDPE, PE 4710, DR7 Pipe	LF	2590		$
4	Water Service Line, 2" HDPE, PE4710	LF	81		$
5	Hydrant Lead, 6" DI AWWA C150/C151 Pipe	LF	291		$
6	Water Meter and Box Combination	EA	68		$
7	Service Line Connection	EA	68		$
8	2" Combination Air Release Valve Assembly	EA	1		$
9	12" Gate Valve	EA	1		$
10	8” Gate Valve	EA	26		$
11	6” Gate Valve	EA	17		$
12	Fire Hydrant Assembly (Including Bollards)	EA	13		$
13	Street Asphalt Repair	SY	2743		$
14	Extra Protection	LF	566		$
Total of All Unit Price Bid Items					$

Total of Unit Price Work (subject to final Unit Price adjustment) $_____.

EXHIBIT F - DAVIS BACON ACT CONTRACT PROVISIONS REQUIRED UNDER 29 CFR SECTION 5.5

This content is from the eCFR and is authoritative but unofficial.

Title 29 —Labor

Subtitle A —Office of the Secretary of Labor

Part 5 —Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (Also Labor Standards Provisions Applicable to Nonconstruction Contracts Subject to the Contract Work Hours and Safety Standards Act)

Subpart A —Davis-Bacon and Related Acts Provisions and Procedures

Source: 48 FR 19540, Apr. 29, 1983, unless otherwise noted.

Authority: 5 U.S.C. 301; Reorganization Plan No. 14 of 1950, 5 U.S.C. appendix; 28 U.S.C. 2461 note; 40 U.S.C. 3141 *et seq.;* 40 U.S.C. 3145; 40 U.S.C. 3148; 40 U.S.C. 3701 *et seq.;* Secretary's Order No. 01-2014, 79 FR 77527; and the laws referenced by § 5.1(a).

Source: 48 FR 19541, Apr. 29, 1983, unless otherwise noted.

Editorial Note: Nomenclature changes to subpart A of part 5 appear at 61 FR 19984, May 3, 1996.

§ 5.5 Contract provisions and related matters.

(a) ***Required contract clauses.*** The Agency head will cause or require the contracting officer to require the contracting officer to insert in full, or (for contracts covered by the Federal Acquisition Regulation (48 CFR chapter 1)) by reference, in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the laws referenced by § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, *Provided,* That such modifications are first approved by the Department of Labor):

(1) ***Minimum wages*** —

(i) ***Wage rates and fringe benefits.*** All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of this section, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(v) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred

during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph (a)(4) of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (a)(1)(iii) of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) ***Frequently recurring classifications.***

(A) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph (a)(1)(iii) of this section, provided that:

(*1*) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(*2*) The classification is used in the area by the construction industry; and

(*3*) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(B) The Administrator will establish wage rates for such classifications in accordance with paragraph (a)(1)(iii)(A)(*3*) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

(iii) ***Conformance.***

(A) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(*1*) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(*2*) The classification is used in the area by the construction industry; and

(*3*) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(C) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a

report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(E) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs (a)(1)(iii)(C) and (D) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph (a)(1)(iii)(C) or (D) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iv) ***Fringe benefits not expressed as an hourly rate.*** Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(v) ***Unfunded plans.*** If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(vi) ***Interest.*** In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

(2) ***Withholding*** —

(i) ***Withholding requirements.*** The [write in name of Federal agency or the recipient of Federal assistance] may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in paragraph (a) of this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld

from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work (or otherwise working in construction or development of the project under a development statute) all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph (a)(3)(iv) of this section, the [Agency] may on its own initiative and after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(ii) ***Priority to withheld funds.*** The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:

(A) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(B) A contracting agency for its reprocurement costs;

(C) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(D) A contractor's assignee(s);

(E) A contractor's successor(s); or

(F) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901-3907.

(3) ***Records and certified payrolls*** —

(i) ***Basic record requirements*** —

(A) ***Length of record retention.*** All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(B) ***Information required.*** Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(C) ***Additional records relating to fringe benefits.*** Whenever the Secretary of Labor has found under paragraph (a)(1)(v) of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan

or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(D) ***Additional records relating to apprenticeship.*** Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

(ii) ***Certified payroll requirements*** —

(A) ***Frequency and method of submission.*** The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the [write in name of appropriate Federal agency] if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the certified payrolls to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the [write in name of agency]. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(B) ***Information required.*** The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph (a)(3)(i)(B) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the sponsoring government agency (or the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records).

(C) ***Statement of Compliance.*** Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(*1*) That the certified payroll for the payroll period contains the information required to be provided under paragraph (a)(3)(ii) of this section, the appropriate information and basic records are being maintained under paragraph (a)(3)(i) of this section, and such information and records are correct and complete;

(*2*) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(*3*) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(D) ***Use of Optional Form WH-347.*** The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(C) of this section.

(E) ***Signature.*** The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(F) ***Falsification.*** The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(G) ***Length of certified payroll retention.*** The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

(iii) ***Contracts, subcontracts, and related documents.*** The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

(iv) ***Required disclosures and access*** —

(A) ***Required record disclosures and access to workers.*** The contractor or subcontractor must make the records required under paragraphs (a)(3)(i) through (iii) of this section, and any other documents that the [write the name of the agency] or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the [write the name of the agency] or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(B) ***Sanctions for non-compliance with records and worker access requirements.*** If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency

may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(C) ***Required information disclosures.*** Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the [write in name of appropriate Federal agency] if the agency is a party to the contract, or to the Wage and Hour Division of the Department of Labor. If the Federal agency is not such a party to the contract, the contractor, subcontractor, or both, must, upon request, provide the full Social Security number and last known address, telephone number, and email address of each covered worker to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the [write in name of agency], the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

(4) ***Apprentices and equal employment opportunity*** —

(i) ***Apprentices*** —

(A) ***Rate of pay.*** Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(B) ***Fringe benefits.*** Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage

determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(C) ***Apprenticeship ratio.*** The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph (a)(4)(i)(D) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph (a)(4)(i)(A) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(D) ***Reciprocity of ratios and wage rates.*** Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

(ii) ***Equal employment opportunity.*** The use of apprentices and journeyworkers under this part must be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) ***Compliance with Copeland Act requirements.*** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) ***Subcontracts.*** The contractor or subcontractor must insert in any subcontracts the clauses contained in paragraphs (a)(1) through (11) of this section, along with the applicable wage determination(s) and such other clauses or contract modifications as the [write in the name of the Federal agency] may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate.

(7) ***Contract termination: debarment.*** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) ***Compliance with Davis-Bacon and Related Act requirements.*** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) ***Disputes concerning labor standards.*** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5,

6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) ***Certification of eligibility.***

(i) By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

(iii) The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

(11) ***Anti-retaliation.*** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

(i) Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

(ii) Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

(iii) Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

(iv) Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

(b) ***Contract Work Hours and Safety Standards Act (CWHSSA).*** The Agency Head must cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1) through (5) of this section in full, or (for contracts covered by the Federal Acquisition Regulation) by reference, in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses must be inserted in addition to the clauses required by paragraph (a) of this section or 29 CFR 4.6. As used in this paragraph (b), the terms “laborers and mechanics” include watchpersons and guards.

(1) ***Overtime requirements.*** No contractor or subcontractor contracting for any part of the conract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) ***Violation; liability for unpaid wages; liquidated damages.*** In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done

under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $33 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1).

(3) ***Withholding for unpaid wages and liquidated damages*** —

(i) ***Withholding process.*** The [write in the name of the Federal agency or the recipient of Federal assistance] may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this paragraph (b) on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

(ii) ***Priority to withheld funds.*** The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:

(A) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(B) A contracting agency for its reprocurement costs;

(C) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(D) A contractor's assignee(s);

(E) A contractor's successor(s); or

(F) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901-3907.

(4) ***Subcontracts.*** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs (b)(1) through (5) of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (5). In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

(5) ***Anti-retaliation.*** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

(i) Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

(ii) Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

(iii) Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

(iv) Informing any other person about their rights under CWHSSA or this part.

(c) ***CWHSSA required records clause.*** In addition to the clauses contained in paragraph (b) of this section, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other laws referenced by § 5.1, the Agency Head must cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor must maintain regular payrolls and other basic records during the course of the work and must preserve them for a period of 3 years after all the work on the prime contract is completed for all laborers and mechanics, including guards and watchpersons, working on the contract. Such records must contain the name; last known address, telephone number, and email address; and social security number of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid; daily and weekly number of hours actually worked; deductions made; and actual wages paid. Further, the Agency Head must cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph must be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview workers during working hours on the job.

(d) ***Incorporation of contract clauses and wage determinations by reference.*** Although agencies are required to insert the contract clauses set forth in this section, along with appropriate wage determinations, in full into covered contracts, and contractors and subcontractors are required to insert them in any lower-tier subcontracts, the incorporation by reference of the required contract clauses and appropriate wage determinations will be given the same force and effect as if they were inserted in full text.

(e) ***Incorporation by operation of law.*** The contract clauses set forth in this section (or their equivalent under the Federal Acquisition Regulation), along with the correct wage determinations, will be considered to be a part of every prime contract required by the applicable statutes referenced by § 5.1 to include such clauses, and will be effective by operation of law, whether or not they are included or incorporated by reference into such contract, unless the Administrator grants a variance, tolerance, or exemption from the application of this paragraph. Where the clauses and applicable wage determinations are effective by operation of law under this paragraph, the prime contractor must be compensated for any resulting increase in wages in accordance with applicable law.

(The information collection, recordkeeping, and reporting requirements contained in the following paragraphs of this section were approved by the Office of Management and Budget:

Paragraph	OMB Control No.
(a)(1)(ii)(B)	1235-0023
(a)(1)(ii)(C)	1235-0023
(a)(1)(iv)	1235-0023
(a)(3)(i)	1235-0023
(a)(3)(ii)(A)	1235-0023
	1235-0008
(c)	1235-0023

[48 FR 19540, Apr. 29, 1983, as amended at 51 FR 12265, Apr. 9, 1986; 55 FR 50150, Dec. 4, 1990; 57 FR 28776, June 26, 1992; 58 FR 58955, Nov. 5, 1993; 61 FR 40716, Aug. 5, 1996; 65 FR 69693, Nov. 20, 2000; 73 FR 77511, Dec. 19, 2008; 81 FR 43450, July 1, 2016; 82 FR 2225, 2226, Jan. 9, 2017; 83 FR 12, Jan 2, 2018; 84 FR 218, Jan. 23, 2019; 87 FR 2334, Jan. 14, 2022; 88 FR 2215, Jan. 13, 2023; 88 FR 57734, Aug. 23, 2023; 89 FR 1815, Jan. 11, 2024; 90 FR 1859, Jan. 10, 2025]

EXHIBIT G - DAVIS BACON WAGE RATES

For this Contract, the applicable wage determination classification shall be Construction Type: Heavy for Yavapai County, Arizona. It shall be the Contractor's responsibility to verify and utilize the most current applicable wage determination, as published on SAM.gov, including any modifications or superseded determinations in effect at the time of bid opening and throughout the duration of the Work, as required by federal regulations.

EXHIBIT H – TECHNICAL PROVISIONS/MODIFIED SPECS

TECHNICAL PROVISIONS

1) All Technical Provisions shall be in accordance to *Phoenix Area Office (PAO) Standard Specifications and Details 2019.* (See Below)

2) MAG section: 610 standard specifications shall be according to the *Standard Specifications for Public Works Construction, Latest Edition*. (https://www.azmag.gov/Programs/Public-Works/Specifications-and-Details)

3) MAG Standard details: 200-1, 200-2, 380, 381, 404-1, and 404-2 shall be according to the *Standard Specifications for Public Works Construction, Latest Edition.* (https://www.azmag.gov/Programs/Public-Works/Specifications-and-Details)

4) In addition, the following modifications will be applied to the previous Standards. (See SECTION-00 MODIFYING SPECIFICATIONS)

PAO/SFC TECHNICAL PROVISIONS (March 2019)

SECTION 00	MODIFYING SPECIFICATIONS
SECTION 01	TRENCH EXCAVATION & BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES
SECTION 02	CONCRETE
SECTION 03	REINFORCING STEEL
SECTION 04	WATER TRANSMISSION AND DISTRIBUTION MAINS
SECTION 05	WATER SERVICE LINES
SECTION 11	ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS
SECTION 28	HIGH DENSITY POLYETHYLENE (HDPE) MAIN & FITTINGS
SECTION 56	HORIZONTAL DIRECTIONAL DRILLING

MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION)

SECTION 610	WATER LINE CONSTRUCTION

TECHNICAL PROVISIONS
SECTION 00 – MODIFYING SPECIFICATIONS

SECTION 01 MODIFICATIONS – TRENCH EXCAVATION & BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES

A. TP-01.10 SEPARATION OF WATER AND SEWER PIPELINES:

Remove:
TP-01.10 SEPARATION OF WATER AND SEWER PIPELINES in its entirety.

Add:
MAG 610.5 SEPERATION in its entirety.

SECTION 05 MODIFICATIONS – WATER SERVICE LINES

A. TP-5.03.G.3 Water Meter:

Change:

…a sealed register magnetic drive water meter with nutating disc, positive displacement, magnetic, or ultrasonic lead-free meter. The meter shall be Badgermeter Model 25, Sensus iPerl, Neptune T10 series, Kamstrup Ultrasonic water meter, …

To:

… 1" BLMJ Meter Lead Free Body with BB with 3G DS Register #B16-A31-A01-0101A-1 or 2" MS Multi-Jet Meter LF with 3G DS Register #M23-A00-A01-0101A-1 …

B. TP-05.03 WATER SERVICE LINE MATERIALS:

Add after item J:

K. Reduced Pressure Principle Backflow Preventer: The Reduced Pressure Principle Backflow Preventer shall be certified to NSF/ANSI 61, ASSE® Listed 1013, rated to 180°F, and supplied with full port ball valves. The main body shall be nylon and the seat disc elastomers shall be silicone. If installed indoors, the installation shall be supplied with an air gap adapter. The Reduced Pressure Backflow Preventer shall be a ZURN WILKINS Model 375XL or equivalent.

C. TP-05.09.D Water Meter and Box Combination:

Change:

… Payment for the water meter and box shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, copper-setter, water meter, water meter box with lid, fittings, gravel, backfilling, compaction, and final cleanup.

To:

… Payment for the water meter box shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, copper-setter, owner-furnished water meter, water meter box with lid, fittings, gravel, backfilling, compaction, and final cleanup.

TECHNICAL PROVISIONS

SECTION 01 - TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES

TP - 01.01 SCOPE:

The work covered by this section includes the furnishing of all labor, tools, equipment, and materials and performing all operations in connection with the excavation, trenching and backfilling of all pipe lines, structures and accessories.

Excavation, as used in these specifications refers to all construction activities necessary to install subsurface utilities in accordance with the plans and specifications. Such activities include, but are not limited to:

A. All necessary clearing, grubbing and site preparation; removal of all materials that may interfere with construction activities (except existing pipe work, conduits, utility structures or other items to be left in place) to the lines and grades indicated on the plans and otherwise described herein.

B. Removal and/or storage of subsurface materials from trench and construction excavation areas to allow installation of designated utilities or structures. All suitable material removed from excavations shall be used, insofar as practicable, in the formation of embankments, fills and backfilling.

C. Preparation of sub-grades and backfilling of trench and construction areas upon completion of utility or structure construction.

D. All necessary bracing, shoring and protection (but not including tight sheeting in trenches and structure excavation ordered left in place by the Owner or Owner's Representative).

E. Final grading, dressing and cleanup of the construction site.

TP - 01.02 SAFETY - PROTECTION OF EXCAVATION, WORK AND PERSONS:

The Contractor shall provide safe working conditions at all excavations. All trench excavation shall be coordinated in strict accordance with current Occupational Safety and Health Standards (OSHA) - Construction Standards for Excavations (29 CFR Part 1926, Subpart P) issued by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) as well as applicable state and local regulations. It is the Contractor's responsibility to become knowledgeable of the regulations and comply with all requirements contained therein.

Excavations and adjacent areas shall be inspected daily by an OSHA certified competent person provided by the Contractor for evidence of hazardous conditions. A record of these inspections shall be kept by the Contractor and be made available to the Owner upon request. Workers in excavations shall be protected from cave-ins. Protection can be by sloping and benching systems, support systems, shield systems, and/or other protective systems as described in the regulations. Only excavations which are entirely in stable rock or excavations which are less than five (5) feet in depth and, upon examination by a competent person, show no indication of potential cave-in are exempt from the requirement for cave-in protection.

A. Trenches: No material shall be placed within two (2) feet of the edge of the excavation. Where employees are required to be in excavations more than four (4) feet deep, an adequate means of exit such as a ladder or steps shall be provided and located so as to require no more than 25 feet of lateral travel. It is the Contractor's responsibility to become knowledgeable of the regulations and comply with all requirements contained therein. The total length of open trench shall not exceed 500 feet at any time. Trenches shall be completely backfilled at the end of each working day, unless otherwise approved by the Owner or Owner's Representative and appropriate protection is utilized.

B. Shoring and Sheeting Sections:

1. Protection of employees in excavations shall conform to applicable OSHA Standards. Any trench protection and modification to trenching safety plans shall be submitted to the Owner or Owner's Representative in writing to be maintained as part of the record.

2. The Contractor shall install all shoring and sheeting systems required to prevent cave-ins and protect employees, adjacent property, and adjacent structures in accordance with current OSHA standards. No extra payment will be made for these items, the cost thereof being merged with and considered a part of the cost for the related excavation.

3. Before sheeting is withdrawn, or trench boxes moved forward, they shall be raised, in place, just above the pipe crown to safely allow the Contractor to completely fill any voids left in the pipe zone.

C. Personal Protective Equipment: The Contractor shall ensure that all employees wear proper protective clothing during construction in accordance with the current OSHA standards. The following measures or provisions are to be adhered to at all times during the construction project:

1. Hard hats shall be worn by all personnel working on the site.

2. Safety shoes or boots will be worn by all personnel working on the site.

3. When appropriate, proper safety vest or fluorescent (yellow, green or orange) safety shirts shall be worn by all personnel working on the site

4. When appropriate, proper eye and hearing protection shall be worn by all personnel working on the site.

5. When appropriate, proper gloves shall be used by personnel working on the site.

6. All visitors to the project job site shall be required to wear proper hard hat and safety vest while on the job site. No unauthorized person(s) shall be allowed on the job site. Owner's Representatives on the job site for inspection or engineering consulting work shall wear all of the above listed personal protective equipment, as appropriate.

7. All heavy construction machinery, such as trenching machines, bulldozers, and backhoes, must be equipped with a roll bar and a back-up beeper meeting the requirements of the above referenced regulation.

TP - 01.03 WORK WITHIN RIGHT-OF-WAYS & TRAFFIC CONTROL:

All work within the right-of-way of a street, road, highway, or other public thoroughfare, including roads, sidewalks or trails, or work which requires encroachment into the right-of-way of a public thoroughfare, shall incorporate adequate signs, barricades, warning lights, and/or flagmen to ensure the protection of the work, protection of the workers, and the safety of the public. When performing any work within the right-of-way of roads or railroads, the Contractor shall comply with the right-of-way permit, as applicable, for the installation including all of the requirements for traffic control and compaction. All work within the right-of-way of roads shall be performed in accordance with the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-14, Division 600" and/or local, municipal, state or other federal requirements as noted.

In addition, the Contractor shall submit a traffic control plan to the appropriate right-of-way controller and the Owner or Owner's Representative for review and approval prior to any work within the right-of-way of any roads or railroads. The plan shall be in accordance with any applicable encroachment permits prior to any work with the right-of-way of any road or land. Any deviation from the plan must be submitted for review and approval by the appropriate right-of-way controller and Owner or Owner's Representative. All open construction, obstructions, or other hazards left in place at the end of a work session shall be barricaded and marked by yellow warning lights, which shall be illuminated from sunset to sunrise. All signs, barricades, warning lights, and other

traffic control devices, and all traffic control activities shall be in accordance with the most recent edition of the Federal Highway Administration "Manual on Uniform Traffic Control Devices" (ANSI D6.1), OSHA regulations, and the requirements of the transportation department which owns or maintains the thoroughfare.

The Contractor shall at all times perform his work so as to cause the least possible inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property in a manner satisfactory to the Owner.

No road or street shall be closed to the public except with the permission of the Owner and proper governmental authority. Private driveways shall remain open to the maximum extent possible. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times.

Temporary provisions shall be made by the Contractor to ensure the use of sidewalks, and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Owner.

TP - 01.04 ROAD, RAILROAD AND SPECIAL UTILITY CROSSINGS (IF REQUIRED):

The Contractor shall be responsible for compliance with all requirements of special crossing permits applicable to this project. The Contractor shall provide copies of such permits prior to the commencement of work. If no crossing permits are appended, and such crossings are indicated on the plans, crossings will comply with all applicable provisions of Technical Provisions 11, in addition to those indicated under other provisions of this Technical Provision. At least two (2) working days' notice shall be given to the Owner or Owner's Representative before work is done on any crossing.

TP - 01.05 DRAINAGE:

The Contractor shall control the grading in the vicinity of the excavation so that the ground surface is properly sloped to prevent water from running into the excavated areas. Water that has accumulated in the excavation from rainfall and/or surface runoff, or from any other cause which might have been prevented by proper care and foresight, shall be removed and the subgrade restored to its proper bearing capacity prior to commencing construction activities, all at the Contractor's expense.

TP - 01.06 PROTECTION OF EXISTING UTILITIES:

The Contractor shall call and utilize the appropriate underground service location company to mark existing utilities within the project area. It shall be the Contractor's responsibility to determine the locations of existing underground utilities including, but not limited to, gas lines, fiber optic lines, telephone lines, pipelines, and drainage lines (storm drains, channels and ditches), not shown on the plans and to confirm the exact locations of those existing utilities shown on the plans. Existing utilities shall be protected from damage during excavation and backfilling of trenches, and if damaged, shall be repaired or replaced at the Contractor's expense. Broken water lines must be cleaned, disinfected, and flushed in accordance with AWWA C651 before being returned to service.

Continuation of the excavation shall not be permitted until damaged utilities have been repaired to the satisfaction of the Owner and the respective utility company. It shall be the Contractor's sole responsibility to protect or remove and replace any or all culverts as required for the satisfactory performance of the work.

TP - 01.07 LOCATING FACILITIES FOR INSTALLED SANITATION FACILITIES:

A. Warning Tape and Tracer Wire:

1. Warning Tape: Warning tape shall be installed 18-inches directly above the crown of the water, sewer, electrical, or other pipe with the printed side up. The warning tape shall also be installed as continuous skirting at the exterior of manholes, valve boxes, or other installed apparatus. For water pipes (mains and service lines), the warning tape shall be BLUE in color with "CAUTION: BURIED WATER

LINE BELOW" continually printed on it. For sewer pipes (mains and service lines), the warning tape shall be GREEN in color with "CAUTION: BURIED SEWER LINE BELOW" continually printed on it. For electrical lines, the warning tape shall be RED in color with "CAUTION: BURIED ELECTRICAL LINE BELOW" continually printed on it. The tape shall be minimum 3-inches wide, 5 mils total thickness and composed of plastic with a metal foil core. Where tracer wire is buried with the pipe line, the locator/warning tape may be plastic without metal foil.

2. Tracer Wire: For water mains and water service lines. Direct bury 10 AWG copper clad steel wire as manufactured by Copperhead Industries, LLC, or direct bury 10 AWG solid copper wire as manufactured by Agave Wire LTD, minimum 261-lb break load with 30 mil High Molecular Weight Polyethylene jacket, blue color, or approved equal. The tracer wire shall be attached to the pipe a minimum of three (3) times for each pipe length.

   a. The tracer wire shall be securely bonded together with an approved underground waterproof splice kit at all wire joints to provide electrical continuity, and it shall be accessible at all trace wire access points. The underground waterproof splice kit shall be equal to 3M Direct Bury Splice Kit DBR/Y-6. If tracer wire is installed, the Contractor shall provide (2) extra Underground Waterproof Splice Kits to the operating utility.

   b. Tracer wire access points shall be Copperhead SnakePit Roadway as manufactured by Copperhead Industries, LLC or approved equal. Materials used to construct lid and tube shall be non-corrosive or corrosion resistant. Tube material shall be of high grade ABS, or equivalent rigid plastic that meets or exceeds ASTM D-1788, Type 1 requirements. Lid material shall be of cast iron or ductile iron and color-coded according to American Public Works Association (APWA) standards. Blue designates water, and green designates sewer. Spacing between tracer wire access points shall be indicated on the plans or as specified be the Owner.

      Tracer wire shall be connected securely to the direct connection hook-up point. Soil around the access box shall be properly compacted. The top of the access box shall be installed to finished grade. Slope final grade away from box for drainage.

   c. All tracer wire shall be tested for continuity after installation in the presence of the Owner's Representative. Tracer wire shall be repaired or replaced, as necessary, until continuity is achieved, at no additional cost to the Owner.

B. Utility Line Markers, Bollards, and Metal Marker Posts: Retroreflective tape shall be installed around the utility line markers, bollards, and metal marker posts according to the manufacturer's recommendation. Tape placement shall be approximately 6-inches from the marker top as shown on details. The 6-inch tape shall be 3M High Density Yellow Pressure Sensitive or approved equal. Concrete shall meet the requirements of TP 02.

   1. Utility Line Marker: Shall be a minimum of 66 inches in length and 3-3/4 inches in width. The utility marker may be installed within the ROW if approved by the Owner or Owner's Representative. The location and frequency of the utility line markers is indicated on the plans. The utility line markers shall be installed directly over the item that it is marking with an anchor barb bury depth of 18-inches.

      a. Water markers shall be blue in color, model CRM306608 with anchor barb and "CAUTION WATER PIPELINE" text on the marker as manufactured by Carsonite Composites, or equal.

      b. Sewer markers shall be green in green, model CRM306607 with anchor barb and "CAUTION SEWER PIPELINE" text on the marker as manufactured by Carsonite Composites, or equal.

   2. Bollards: Bollards shall be 78 inches long with a four (4) inch diameter post. They shall be installed to leave 48 inches exposed above ground.

      a. The four (4) inch diameter posts shall be aluminum or steel pipe filled with concrete. Bollards shall be painted with a minimum of two (2) coats of yellow paint designed for outdoor commercial

use. Bollards shall be properly cleaned and the surface prepared in accordance with the paint manufacturer's recommendations prior to painting. Under no circumstances shall bollards be installed within the right-of-way of any roadways, unless specifically indicated on a right-of-way permit or as approved by the right-of-way controller.

b. Set bollards in 12-inch diameter holes full of concrete. Set depth of bollard in 30-inches of concrete according to the detail drawing. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Six (6) inches of concrete shall be placed under the post and concrete shall extend two (2) inches above grade and be crowned to shed water. Forms are not required, but may be used.

3. Metal Marker Posts: Markers shall be 66 inches long, 2-1/2 inches diameter, concrete filled, with a two (2) inch diameter stampable aluminum or brass cap. The cap shall be Berntsen Model CD2L, or approved equal. Metal marker posts shall be installed to leave 36 inches exposed above ground.

a. The 2-1/2 inch diameter aluminum or steel utility markers with stampable aluminum or brass caps shall be installed to mark the location of all marked facilities. Marker posts shall be painted with a minimum of two (2) coats of yellow paint designed for outdoor commercial use. The marker posts shall be properly cleaned and the surface prepared in accordance with the paint manufacturer's recommendations prior to painting. Under no circumstances shall metal marker posts be installed within the right-of-way of any roadways, unless specifically indicated on a right-of-way permit or as approved by the right-of-way controller.

b. Set metal marker posts in concrete in 10-inch diameter holes and depth of metal marker post in concrete of 30 inches. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Six (6) inches of concrete shall be placed under the post and concrete shall extend two (2) inches above grade and be crowned to shed water. Forms are not required, but may be used.

TP - 01.08 EXCAVATION:

All excavation, other than by drilling and blasting, undertaken with the excavation equipment commonly used in the industry for this type of excavated material shall be classified as common excavation.

All excavation shall be made by open cut method except as approved or specified. During excavation, materials suitable for backfill shall be neatly piled no closer than 24-inches from the edge of the excavation. All materials not required or not suitable for backfill shall be removed and wasted at locations designated by the Owner or Owner's Representative.

A. Width: The sides of all trenches for the installation of utility piping systems shall be as nearly vertical as soil conditions will permit from ground level to the pipe. Except for the trenching of 1-inch water service lines, the width of the trench shall not be less than 16-inches nor more than 24-inches wider than the outside diameter of the pipe barrel. Trench excavation shall be centered on pipe alignment such that a minimum clear space of eight (8) inches is provided on each side of the pipe. Trench width above the level of the top of the pipe may be as wide as necessary for shoring or sheathing and for proper installation of the work.

B. Depth: The trench shall be excavated to the depth that permits pipe to be laid at the elevations shown on the plans or with the required depth of cover specified by the Owner or Owner's Representative, such as below the frost line. Depth of cover shall be measured from the finished grade or the surface of the permanent improvement to the top of the pipe barrel.

C. Preparation: The bottom of the trenches shall be accurately shaped to line and grade and shall provide uniform bearing and support for each section of the pipe on specifically placed bedding material at every point along its entire length. Bell holes and depressions for joints shall be dug after the trench bottom has been graded and shall be only of such length, depth and width as required for properly making the

particular type joint. Care shall be taken not to excavate below the depths indicated. Unauthorized over depths shall be backfilled with suitable bedding material at the Contractor's expense.

D. Previous Excavation: If the trench passes over a sewer or other previous excavation, the trench bottom shall (1) be compacted to provide support equal to that of the undisturbed native soil or (2) conform to the specific regulatory requirements that preclude damage to the existing installed facility.

E. Unstable Subgrade: Where soft, spongy or otherwise unsuitable material is encountered, which will not provide a firm foundation for pipe, the Owner or Owner's Representative will direct the extent to which removal and replacement shall be made with suitable material. Special pipe foundation material is NOT anticipated. However, if required, a price shall be negotiated between the Owner and Contractor for special pipe foundation material.

F. Underground Obstructions: The Contractor shall preserve intact any underground pipes, culverts or other utilities encountered during construction (except as hereinafter permitted) provided their location is such that they do not interfere with new pipelines or structures being installed. The Contractor shall notify all appropriate utility authorities of his construction schedule so they may be at the site to locate and protect their property. If any utilities or structures are accidentally broken or disturbed, they shall be replaced immediately to a condition at least equal to that in which they were found, all at the Contractor's expense.

Couplings used to repair water and sewer mains or service lines shall be approved by the operating utility and the Owner or Owner's Representative. The repair work shall be done in a manner acceptable to the Owner or Owner's Representative and the utility company. Any existing water or sewer services that will intersect or interfere with the new pipelines or structures shall be rerouted by the Contractor in the manner indicated by the Owner or Owner's Representative.

Existing water or sewer services from the mains to private property that interfere with trenching operations may be cut and replaced at the Contractor's option and expense, provided that users of such services are notified at least 2 hours in advance and that the use of such service shall in no case be interrupted for more than 4 hours, unless specifically permitted in writing by the user. Materials and construction for these items shall be as provided in other sections of these specifications. All new and existing water and sewer mains and water and sewer services shall be protected from freezing at all times during construction.

G. Rock: The inclusion of a bid item and estimated quantity for rock excavation in the Bid Schedule indicates that rock excavation is probable. However, the exclusion of this item from the Bid Schedule does not preclude the possibility that rock will be encountered; it merely indicates that it is not anticipated. If unanticipated rock excavation is needed , the Contractor and the Owner will negotiate a price for the rock excavation.

Should rock excavation be required, it shall be the responsibility of the Contractor to have an experienced powderman handle all blasting and be able to furnish proof of credentials to the Owner. The Contractor shall comply with all laws, ordinances, applicable safety code requirements and regulations relative to the handling, storage and use of explosives and the protection of life and property. The blasting Contractor shall be licensed by the state in which the blasting is conducted. Blasting shall be conducted in accordance with OSHA guidelines. All necessary permits shall be secured and submitted to the Owner or Owner's Representative. The Contractor shall protect all adjacent utilities lines, property and structures from the blasting operation. The Contractor shall be responsible for any damage and injury caused by blasting operations. The Contractor shall inform all residents in the vicinity of proposed blasting activities and shall be responsible for any damage to persons or property as covered in the General Provisions.

Vibration Control (Ground Vibration) – Whenever vibration damage is possible, monitor each blast with a seismograph located, as approved, between the blast and the closest structure subject to blast damage. Peak particle velocity shall not exceed safe blasting recommended criteria, established by the Office of Surface Mining – OSM Alternative Blasting Level Criteria (Modified from Figure B 1, R1 8507 U.S Bureau of Mines.

Where blasting is required within 2,000 feet of any building, the blasts shall be covered with suitable weighted plank coverings or mats to confine all materials lifted by blasting. There shall be no blasting within 40 feet of the finished pipeline. The open end of the finished pipe line shall be closed and covered with earth to a depth 1 foot or greater before each blast. All charges shall be fired electrically. Erect suitable barricades and/or warning signs on all public thoroughfares leading to the site of blasting operations. Give adequate audible warning before each blast.

The Contractor shall repair any damages caused by rock excavation operations. The Contractor shall remove the excavated rock from the site unless otherwise directed by the Owner or Owner's Representative.

The following paragraphs define solid rock and loose rock excavation.

1. Solid rock shall be defined as large masses of igneous, metamorphic, or sedimentary rock that, in the opinion of the Owner or Owner's Representative, cannot be excavated without drilling, blasting, or the use of rippers or other specialized equipment. Any material excavated without the use of blasting or specialized ripping equipment shall not be considered solid rock.

   Solid rock excavation shall be measured in cubic yards from the top of the rock to a point 4-inches below the invert of the installed pipe and an assumed 24-inch trench width, regardless of the actual trench width and depth excavated. For structures, the rock shall be profiled at 12-inches outside the perimeter of the structure. The profile shall extend from the top of the rock down to the bottom of the rock to a maximum of 6-inches below the structure's footing. The rock volume shall be measured and computed by the Owner or Owner's Representative. The measurements shall be within the nearest 0.1-feet from the surface and no less than every 10-feet along the rock profile by one of the following methods:

   a. Excavating, ripping and exposing the rock profile for measurement, prior to any blasting. This shall be the responsibility of the Contractor and no additional payment shall be made for this excavation.

   b. Rock profile determined by drilling without excavating and measurements taken prior to any blasting.

   c. Rock profile measured after blasting and excavation. A 20% deduction shall be made in rock determination when this method is used to allow for expansion in ledge due to blasting.

2. Loose rock shall be defined as boulders and other detached stones each having a volume of one (1) cubic yard or more, but can be removed without drilling, blasting, or the use of a ripper or other specialized equipment. Loose rock shall be removed from the excavation in such a way that a clear distance of at least 4-inches exists between the rock and the bottom of the pipe, and 6-inches exist between the rock and the bottom of the structure. Loose rock shall not be used for backfill. Loose rock excavation shall be measured in cubic yards as the total volume of only those rocks or boulders that are individually over one (1) cubic yard in volume. The rock volume shall be confirmed with the Owner or Owner's Representative.

   A trench in which rock is encountered shall be excavated at least 4-inches deeper than the pipe invert and refilled to the required elevation with sand, gravel, or crushed rock passing a ¾-inch mesh screen. Bedding material shall extend upward at least 12-inches above the top of the pipe. Payment for this fill material shall be considered incidental to the rock excavation and no additional payment shall be made.

H. Structural Excavation: Excavation for structures (e.g., vaults, tanks, manholes, lift stations), shall extend a sufficient distance from walls and footings to provide for forming, except where concrete for walls or footings is authorized to be deposited directly against excavated surfaces. Care shall be taken to avoid

excavating below the depths indicated in the plans. Over-excavation shall be restored to proper elevation by filling with suitable granular bedding material at the Contractor's expense.

I. Removal of Nuisance Water: The Contractor shall remove and dispose of water entering the trenches and shall keep the trenches water free until the facilities are in place and sealed against the entrance of water. Use of a "trash" pump for removal of nuisance water shall be at no extra cost and shall not be considered dewatering. In no case shall water, earth, or any foreign materials be allowed to enter the water or sewer lines.

1. The removal of nuisance water is determined by pumping the water out of the trench with a heavy-duty 4 inch construction trash pump with a strainer for a minimum of 1 hour. The strainer shall be placed in a bed of pea gravel or a slotted PVC pipe in order to screen the debris.
2. All water removed from trenches shall be conveyed to natural drainage channels, storm sewers, or proper reservoirs as approved by the Owner or Owner's Representative. Such removal of water shall be in a manner that prevents property damage, erosion, or sedimentation.

TP - 01.09 DEWATERING:

The inclusion of a fee schedule item and estimated quantity for dewatering in the fee schedule indicates that dewatering is probable. However, the exclusion of this item from the bid schedule does not preclude the possibility that water will not be encountered, it merely indicates that it is not anticipated.

If continuous pumping with well points is required to maintain a satisfactory trench, and the Contractor is so directed by the Owner, this work shall be considered as dewatering. Well points shall be set separately for each trench being dewatered. Dewatering shall be based on the actual number of lineal feet of trench dewatered. Should dewatering not be included within the fee schedule, dewatering shall be paid for at the negotiated price between the Contractor and Owner.

TP - 01.10 SEPARATION OF WATER AND SEWER PIPELINES:

Water lines located near sewer facilities present conditions for potential cross contaminations. Protection from cross contamination can be provided by separation of the facilities and use of extra protection measures. For measuring separation, all measurements shall be the clearance between pipes and/or structures.

The angle of a water line and sewer line crossing shall be limited to between forty-five (45) degrees and ninety (90) degrees from parallel. Intersection angles of less than forty-five (45) degrees shall not be permitted.

Water lines and sewer lines shall not be constructed within a common trench.

For the purposes of this section, the term "lines" shall include mains, laterals, and service lines for both water and sewer.

A. Separation of Water and Gravity Sewer Lines: When water and sewer lines are laid parallel to each other, the horizontal distance between the water and sewer lines shall be at least 10 feet. Each line shall be laid in a separate trench.

When physical conditions, such as an existing obstruction, do not allow the required ten (10) foot horizontal separation, the water and sewer lines may be laid as close as five (5) feet if the bottom of the water line is at least 18 inches above the top of the sewer line.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

When water lines cross sewer lines, the water line shall be above the sewer line with no less than 18 inches vertical clearance.

Where a water line must cross under a sewer line, a 20 foot water pipe section shall be centered under the sewer line with a minimum vertical clearance of at least 18 inches between the bottom of the sewer line

and the top of the water line. New water and sewer lines being installed that are crossing, shall be arranged so that the pipe line joints of both the water and the sewer are equidistant and as far as possible for each line's joints.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

B. Separation of Water and Pressurized Sewer Lines: Water lines shall not be placed within ten (10) feet horizontal and within three (3) feet vertical above or below a pressurized sewer line.

Extra protection, as described in section TP-01.10.F, shall be required where a water line is placed within ten (10) feet horizontal and within three (3) feet vertical above a pressurized sewer line.

Extra protection, as described in section TP-01.10.F, shall be required where a water line is placed within ten (10) feet horizontal and any distance below a pressured sewer line.

C. Service Line Separation: Water and sewer services shall meet the horizontal separation requirements listed above, except where water and sewer services unavoidably must enter the building with less than 10 foot separation, the services shall diverge to achieve the required separation within 10 feet of the building wall. Water and sewer services crossing other service or mains shall meet the vertical separation requirements listed above.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

D. Water Main Separation from Sewer Manholes: No water pipe shall pass through, under, or come into contact with any part of a sewer manhole and shall be separated ten (10) horizontal feet from the closet edge of a sewer manhole.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

E. Separation between Water Lines and Components of the Sewage Disposal System: Water mains and water service lines shall meet the following minimum separation distances:

1. 10 feet to Sewer Manhole
2. 10 feet to Septic Tank
3. 25 feet to Septic Drainfield
4. 50 feet to Outhouse
5. 100 feet to Fence of Individual Lagoon
6. 500 feet to Fence of Community Lagoon

F. Extra Protection: When separation between water lines and sewer facilities cannot be accommodated, extra protection shall be required. Prior to the use of these extra protection measures, approval must be obtained in writing from the Owner.

New water lines that require extra protection from new sewer lines, shall have extra protection provided by using ductile iron pipe for one of the water or sewer lines. Lines of standard pipe length shall be centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within 15 feet horizontal.

New water lines that require extra protection from existing sewer lines shall be constructed using the extra protection specified for new water lines, and the existing sewer line shall be encased in 6 inches around the circumference of the pipe of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal to ensure a water tight seal.

New water lines that require extra protection from existing sewer lines shall be constructed using the extra protection specified for new water lines, and the existing sewer line:

1. shall be reconstructed using a standard length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal, this shall include providing the necessary sewage by-pass means during construction as needed to prevent obstructing sewage flow in the existing line or.
2. shall be encased in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Existing water lines that require extra protection from new sewer lines shall provide for extra protection by:

1. constructing the new sewer line and reconstructing the existing water line using ductile iron pipe for both lines with standard pipe lengths centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or
2. encasement of both the existing water line and the new sewer line in six (6) inches of concrete for the horizontal distance of the lines that require extra protection but for a distance no less than ten (10) feet horizontal.
3. Extra protection for existing ductile iron water lines shall be met by the installation of restrained or mechanical joints on the existing water line within ten (10) feet horizontal of the crossing and either
    a) construction of new sewer line using a standard pipe length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or
    b) encasement of the new sewer line in six (6) inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Encasement of either the water lines or the sewer lines may be encased in a watertight carrier pipe that extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the Owner or Owner's representative.

Installation of additional pipe or fittings or concrete for extra protection as required by the pipe alignment shown on the plans shall be incidental to the respective water or sewer line construction. Payment for unexpected utility crossings that require extra protection shall be negotiated between the Contractor and the Owner.

G. Polystyrene Insulation: Rigid extruded polystyrene insulation board shall have a minimum compressive strength of 25 psi. Width shall be 4-feet for mains 6-inch (nominal diameter) and larger and 2-feet for mains and service lines less than 6-inches (nominal diameter). Unless otherwise shown on the plans, the insulation board shall be installed 6-inches above the pipe and shall be a minimum of 2-inches thick.

TP - 01.11 BACKFILLING:

This section describes requirements for backfilling any excavation made to install buried pipeline, structure, or other item where structural fill is placed. It describes the material, placement, and compaction requirements.

A. Trenches and Pipes: Bedding and backfill materials to a depth of 12 inches above the pipe shall be carefully deposited in layers not more than six (6) inches thick (loose measurements), wetted to optimum moisture content, and hand or mechanically compacted. Fill used for this bedding and initial backfill shall meet the requirements set forth herein. The excavation material shall be placed in layers not to exceed 12 inches and compacted to the density specified in section TP-01.12 from 12 inches above the pipe to ground surface. Final backfill shall be left in a uniform, neat condition matching the surrounding grade.

B. Structures: Backfill materials shall be placed gradual and even to prevent tipping. Backfill shall be placed around structures with lifts not exceeding 12 inches and compacted to the density specified in TP-01.12. Backfill material shall meet the specifications identified herein. Generally, compact the fill in the same

manner as the standard trench procedure. Backfill compaction equipment should be suited for site conditions to avoid damage to installed structures.

Wherever trenches or surrounding structures have not been properly filled, or if settlement occurs, they shall be reopened to the depth required for proper compaction and refilled and re-compacted as specified and approved by the Owner or Owner's Representative at the Contractor's expense.

Compaction methods and equipment may utilize hand and mechanical tampers and rollers. The equipment and procedures proposed by the Contractor shall be appropriate for the respective soils and shall be subject to the approval of the Owner or Owner's Representative.

C. Materials: All backfill material shall be approved in advance of installation by the Owner or Owner's Representative. Materials shall be obtained from areas approved by the Owner or Owner's Representative.

Backfill material will not be paid for separately, but shall be considered as subsidiary to and a part of the cost for the applicable contract bid item.

1. Embedment: Embedment is that material from the bottom of the trench to 12 inches above the pipe, and includes the pipe bedding material (upon which pipe is placed), haunching material (extending from pipe bottom to pipe's vertical centerline), and initial backfill material (extending from pipe's vertical centerline to 12 inches above pipe). Native soil used for embedment must be free from clods of earth or stones larger than 3/4 inch in any dimension, organic refuse, debris, frozen soil, and other objectionable material. If native soil does not meet this criteria and cannot be screened to this criteria, the Contractor shall use imported material.

2. Imported Bedding Material: If required, special bedding material shall consist of sand, sandy gravel, or other suitable granular material having a maximum plasticity index of 6, with 100% of the bedding material smaller than 3/4 inches, and no more than 5% passing a No. 200 sieve. Contractor shall be responsible for the costs of any imported material.

3. Stabilization: Granular stabilization material shall be used to replace soft, spongy, or other unsuitable material, including rock encountered in excavation, to the depths necessary to support the pipe or structure. Stabilization materials shall be underlay bedding material (as applicable) and shall consist of suitable hard, durable granular material having a maximum size of 6-inches, graded so that a maximum of 20% passes a No. 4 sieve. Granular stabilization is not anticipated. If required, a price for granular stabilization shall be negotiated between the Contractor and the Owner.

4. Final Backfill: In general, final backfill will be that material originally excavated from the trench and will extend from 12 inches above the pipe to surface grade. Final backfill material shall be the same as that around the pipe except that the inclusion of a limited amount of stones up to 6 inches in diameter will be permitted.

D. Placement:

1. Embedment: Embedment shall be placed in 6-inch loose lifts and compacted as described herein. Care shall be taken to ensure that the pipe is not supported by the bells of the pipes.

   a) Bedding: Bedding is the fill material below the pipe. To remove stony soils, the Contractor shall excavate approximately 4 inches deeper than the required grade and bed the pipe with imported material. Bedding material is to be compacted to 90% of the maximum dry density as determined by the Standard Proctor density test (ASTM D-698).

      If over-excavation is required for removal of unsuitable native soils (weak structural soils), and bedding material is to be compacted to 95% of the maximum dry density as determined by the Standard Proctor density test (ASTM D-698).

b) Haunching: Haunching is the material from the bottom of the pipe to the vertical centerline of the pipe. The same material used for bedding the pipe shall be used for haunching. After the jointing is completed and the pipe has been approved by the Owner, the haunching material shall be placed by hand and worked under the pipe haunch to provide adequate side support for the pipe. The haunching shall be compacted to 85% of the maximum dry density as defined in TP Section 01.12. Placement and compaction of the haunching shall be achieved so as to avoid damage to or displacement of the pipe.

c) Initial Backfill: Initial backfill is the material from the vertical centerline line of the pipe to 12 inches above the top of the pipe. The same material used for bedding the pipe shall be used for the initial backfill. The initial backfill shall be compacted to the density as defined in section TP Section 01.12. The Contractor shall carefully place and compact the initial backfill in such a manner that damage to or displacement of the pipe does not occur.

2. Final Backfill: Final backfill shall not be placed until the embedment material is placed and compacted to the maximum dry density as defined in section TP-1.12, and the Owner or Owner's Representative have inspected and approved the installation. Final backfill shall be placed in lifts not to exceed 12-inches unless otherwise approved by the Owner or Owner's Representative. Compaction shall be as defined in Section 01.12.

3. Backfill for Road Subgrade: Under existing and proposed roadways, to a distance of 10-feet on either side of the road, bedding and backfill materials shall be carefully deposited in layers not more than 6-inches thick, loose measurements, wetted to optimum moisture content and mechanically compacted as described in the Compaction Requirements, Methods, and Testing section. If applicable, the Contractor shall comply with local, municipal, county, state, and federal highway authority's roadway subgrade standards.

   a) In areas where pavement is to be replaced, or in roads that are to be paved, remove cobbles that may interfere with subgrade preparation. This shall include the backfill within 12 inches of the finished subgrade elevation. The upper 12 inch layer, forming the subgrade for pavements, shall be compacted to a density of at least 95% (ASTM D-698 - Standard Proctor Test). See Section 11 of the Technical Provisions where this is required.

   b) Cement slurry can be substituted for compacted native backfill and subgrade if approved by Owner or Owner's Representative. The cement slurry shall meet the requirements for slurry as provided in TP 02 and shall be placed from the concrete truck at a slump of 6 to 8 inches. Steel plates 5/8 inch thick are to be placed over the trench with at least 6 inches overlap on each side and edged with asphalt to prevent traffic movement. The concrete slurry shall be allowed to set for a minimum of 12 hours before completing the asphalt patch. Slurry can typically be installed from the trench bottom to ground surface and no intermediary subgrade material is required for placement of asphalt patch.

4. Where trenches cross roads, streets, or driveways, backfilling shall be completed immediately following excavation and inspection. No trenches across roads shall remain open overnight. All crossings shall be backfilled, compacted and open to traffic at the end of each day's work. Major road crossings shall be excavated and backfilled in half widths of the traveled way so that at least one-half of the roadway is open to controlled traffic at all times during the work.

5. Backfill Around Structures: Backfill around structures shall conform to the same requirements as those for backfill around piping in unpaved areas, unless more stringent requirements are indicated in other sections of these specifications.

TP - 01.12 COMPACTION REQUIREMENTS, METHODS AND TESTING:

A. Minimum Density: Unless otherwise specified by applicable permits initial and final backfill and gravel resurfacing shall be compacted to the following minimum requirements. The minimum acceptable percent of compaction is the in place dry density divided by the reference density times 100. Compacted soil shall also be at plus or minus 2% of optimum moisture content. Contractor shall contact the operating utility prior to obtaining water from the public water system.

TYPE	LOCATION	REQUIRED COMPACTION
I	Under any existing or proposed pavement, curb, gutter, sidewalk, roadway, shoulder, alley, slab, footing, canal embankment, or when within 2 feet of the above.	95%
II	Within any gas, electric, or telephone utility easement, or within any street or road right-of way outside the limits defined above as Type I.	90%
III	All other locations not defined above as Type I or Type II.	85% (or 100% of adjacent natural ground)

B. Reference Densities/Baseline Testing: The Contractor, at his expense, shall provide the reference densities for the various bedding and backfill materials used. All tests shall be performed by a certified soils testing laboratory approved by the Owner or Owner's representative. If reference to natural ground is used, a nuclear gauge may be used to measure the density of the natural ground.

The reference densities for compaction tests shall be established in accordance with ASTM D-698, Standard Proctor Test. The Contractor shall submit for approval a testing plan identifying proposed testing locations prior to the start of any excavation work. Contractor shall provide copies of the Standard Proctor Tests with 3 point minimum moisture versus density curves.

The Contractor shall coordinate the collection of soil samples for proctor testing with the Owner or Owner's Representative such that both parties are on-site during the collection of soil samples. This will ensure that enough samples are collected to provide for accurate density testing during construction by providing reference density for differing soil conditions within the project area. Should a change in soil be encountered at any point of the installation, a new sample shall be taken and additional test shall be conducted.

C. Methods: Mechanical compaction is permitted. Water jetting methods are not permitted. The backfill shall be uniformly moistened to optimum moisture content, placed in sufficiently thin layers to obtain the specified results, and compacted with hand and/or pneumatic tamping rammers, vibrating plate compactors, sheepsfoot rollers, compaction wheels, hydrohammer, or other device(s) which will obtain the specified density for the particular soil type, without injury to the pipe or related structures.

D. Density Tests: Backfill density tests shall be performed in accordance with the latest versions of ASTM D-1556 (Sand Cone Method), ASTM D-2167 (Rubber Balloon Method), ASTM D-2216 (Moisture Content), ASTM D-2922 (Nuclear Density), and ASTM D-3017 (Nuclear Moisture Content). The Contractor will perform initial field density tests for each location listed in the next paragraph at the expense of the Contractor. Results of the test shall be provided to the Owner and approved prior to continuing. Any additional tests due to failure of initial tests shall be at the expense of the Contractor.

E. The Contractor will perform at least one (1) compaction test at each Type I or II location as defined in TP-1.12. Compaction tests shall be performed at a minimum of five hundred (500) linear feet of trench at Type II or III locations as defined in TP-1.12 and in accordance with the approved Contractor's testing plan as specified above in 01.12.B or as determined by the Owner. The exact test locations shall be

specified by the Owner's Representative. The Owner may request performance of additional tests at the Owner's expense.

If the results of any of the compaction tests indicate insufficient compaction, the area in question shall be reopened to a depth required for proper compacting, then refilled, compacted and retested, at the expense of the Contractor, until the compaction tests indicate that the necessary compaction requirements have been met. Two copies of the test results of any retesting performed by the Contractor shall be provided to the Owner, for his approval, prior to any permanent surfacing. Any improperly placed backfill, or locations where settlement occurs, shall be reopened to the depth required for proper compaction, then refilled and compacted at the expense of the Contractor. The surface shall be restored and resurfaced, if necessary to the required grade.

TP - 01.13 ROADWAY RESTORATION AND PATCHING:

Whenever existing roadways or driveways are disturbed during the normal course of construction, the Contractor shall restore the roads and driveways to their original condition. Surfacing shall be replaced where the roadway has gravel, concrete or asphaltic surfacing. The Contractor shall comply with the standards and construction requirements of the applicable local, municipal, county, state and federal highway authorities, as noted on the plans, special provision or exhibits/crossing permits in this contract. The Contractor shall observe all prescribed traffic safety regulations.

A. Repair of the road shall be complete with adequate subgrade compaction and acceptable restoration of the roadway surface, as specified herein. No scarring of pavement will be allowed from excavation equipment tracks, outrigger shoes or other stabilizers.

Gravel used in regraveling and road base shall be well graded and conform to the following:

SIEVE SIZE	% PASSING
1-1/4	100
#4	38-65
#8	25-60
#30	10-40
#200	3-12

B. All cuts in the pavement between pavement that is to remain and pavement that is to be removed shall be cut straight leaving a clean regular and vertical edge. This edge shall be protected throughout the work, or shall be re-cut before placing the final surfacing material. After the pipe is installed, compacted backfill shall be placed to within 9 to 12 inches of the level of the roadway surface, as applicable.

1. Reinforced Concrete Patch: Compacted aggregate base course, six inches in depth, shall be placed in the roadway immediately beneath the concrete patching. The cut shall be filled with a six inch thick reinforced concrete patch. Concrete shall meet the requirements of Section 02-Concrete. The reinforcement shall be #6 welded wire reinforcement mesh (6-inch by 6-inch). The concrete patch shall be a minimum of four feet wider than the top of the trench and centered over the trench. The Contractor shall notify the Owner at least 48 hours before concrete is poured to allow the Owner or Owner's Representative to inspect patch preparation.

2. Asphalt Patch: Compacted aggregate base course, six inches in depth, shall be placed in the roadway immediately below a bituminous wear course. Asphalt mix surfacing conforming to ASTM D-3515 (Hot-Mixed, Hot Laid Bituminous Paving Mixtures) shall be placed and compacted in accordance with the detail to make the crossing level with the existing roadway. Cold mix is not permitted as a permanent asphalt patch.
3. Regraveling: Where regraveling is required after crossing of the existing roads or driveways, the Contractor shall remove existing gravel surfacing, stockpile the material, and restore the road surface after installation of the pipe. The stockpiled material shall be used for backfilling to within two inches of finished level. The final two (2) inches of gravel surfacing shall conform to the requirements of gravel for re-graveling as listed above in TP 01.13.A. This material shall be placed only in the amount and at the locations designated by the Owner or Owner's Representative. All quantities shall be verified by the Owner or Owner's Representative during placement of the gravel.

TP - 01.14 DISPOSAL OF EXCESS MATERIAL:

Excess material, including rock, broken concrete, bituminous materials, debris, or other materials not suitable for backfill, shall be removed from the site and wasted in the disposal areas selected by the Contractor and approved by the Owner or Owner's Representative.

The disposal of such excess materials will not be paid for separately, but shall be considered as incidental to and a part of the cost for the applicable contract bid item.

TP - 01.15 CLEAN-UP:

Upon completion of the work, the entire site shall be cleared of all debris, and ground surfaces shall be finished to smooth, uniform slopes, and shall present neat and workmanlike appearance. All slopes shall be trimmed and dressed, and all surfaces graded such that effective drainage is assured. Unpaved streets shall be graded smooth to the satisfaction of the Owner or Owner's Representative.

TP - 01.16 TRENCH MAINTENANCE:

The Contractor shall, for a period of one year after completion and final acceptance of the work, maintain, and repair any trench settlement that may occur and shall make suitable repairs to any pipe, pavement, or other structures that may become damaged as a result of backfill settlement.

TP - 01.17 STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

For surface disturbances greater than one (1) acre in size, the Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the latest requirements of the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Large and Small Construction Activities. The SWPPP must be prepared in accordance with good engineering practices and must 1) Identify all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site; 2) Describe practices to be used to reduce pollutants in storm water discharges from construction site; 3) Assure compliance with the terms and conditions of the NPDES General Permit.

If the Contractor is not experienced in the preparation of SWPPP, the Contractor shall retain the services of a sub-consultant regularly engaged in the preparation of SWPPP to perform said service. The completed SWPPP must be approved by the Owner or Owner's Representative at least 10 business days before the start of construction so that a Notice of Intent can be sent to EPA.

The Contractor shall fully implement the SWPPP from the commencement of construction until final stabilization, as defined in the NPDES General Permit is achieved.

The Contractor shall maintain and update the SWPPP, as required in the NPDES General Permit, during construction. Updates shall include amendments required as a result of the ineffective controls discovered through the course of inspections or investigations conducted by the Owner or Owner's Representative, site staff, or by local, state, tribal or federal officials. The Contractor shall submit a Notice of Intent to EPA to obtain permit coverage, modify the coverage as necessary, and terminate permit coverage once final stabilization is achieved.

TP - 01.18 LINES AND GRADES:

The Owner or Owner's Representative will give all lines, grades and building locations on the plans and will supply the Contractor with the AutoCAD drawing to stake out the facilities to be installed. The Contractor shall be responsible for staking out pipeline centerlines with a lath every 200 feet or line-of-sight whichever is less. Bends, alignment, intersections, manholes, lift station centers and fence corners shall be staked by the Contractor and provided with two offsets for alignment. Elevation references will be provided as shown on the plans, for sewer lines, lift stations, vaults, tanks, sewer manholes, and other facilities where elevations are critical to the performance of the system. The Contractor shall be responsible for the preservation of the location and line and grade stakes when set, and if disturbed, shall have such stakes replaced.

TP - 01.19 CLEARING AND GRUBBING:

It is the Contractor's responsibility to clear and grub the site prior to or during construction. The Contractor shall remove all trees along the water and sewer main alignments in accordance with Tribal and local regulations. Proper approvals must be obtained as necessary prior to removing and disposal of trees and vegetation. Trees may either be chipped with a wood-chipper and placed over the trench for erosion control or disposed of at the Contractor's expense. Clearing and grubbing shall be done at the Contractor's expense.

TP - 01.20 FINISH GRADING:

After the structures have been constructed and installed, all piping installed, all required compaction and density testing has been performed and all backfilling and embankments have been completed, areas on the site of the work shall be brought to the true grades. All slopes shall be trimmed and dressed, and all surfaces graded such that effective drainage is assured. Final grading shall prevent water runoff from pooling around installed facilities. The Contractor shall leave each project site in a neat and orderly condition, restoring it as near as possible to its original condition and to the approval of the Owner or Owner's Representative.

TP - 01.21 SEEDING:

All disturbed areas shall be returned to their pre-construction vegetative state. The Contractor shall submit a seed mix that is equivalent to state highway or local road authority's approved seed mix. The Contractor shall protect the seed after it is placed with a tackifier, hay mulch, straw mulch, wood cellulose mulch, or as approved by the Owner. A minimum of 20 pounds of seed per acre shall be placed. Seed shall be placed by either drill seeding at a depth of approximately one (1) inch or broadcast seeding. If broadcast seeding is utilized, the Contractor shall apply twice the minimum seeding rate (i.e. 40 pounds of seed per acre). The Contractor shall perform maintenance as needed to ensure that adequate vegetative growth and stabilization has taken place to minimize erosion after construction is completed.

TP - 01.22 RECORD DRAWINGS:

The Contractor shall be responsible for keeping accurate records of all installed items under sections of the Technical Provisions package. These records shall indicate revised changes ("red-lines") of the construction drawings in sufficient detail to be accepted by the Owner or Owner's Representative for record drawings. Sufficient detail under this contract means that the Contractor shall take accurate measurements and record them on the drawings to provide the minimum information of at least two swing ties and distances to permanent objects. These permanent objects shall include but not be limited to all: valves, pressure reducing valves, air and vacuum valves, meters, curb stops, hydrants, connections to other lines, bends, marker posts, manholes, fence corners,

inspection ports, water and sewer tapping points, cleanouts, septic tank access covers, drainfield extents, intersection with other utilities, connection to existing utilities or home, roadway crossing locations, abandoned facilities, and depths of noted facilities; the beginning and end of any stabilization material placed; the beginning, end, and depth of rock encountered; the beginning, end, and depth of any encasement installed; and the location and depth of any each utility encountered. Further information on record drawings may be contained in the Supplementary Conditions.

The recording of the as-built information is considered an integral part of the progress of this construction and shall be reviewed with the Owner and Owner's Representative in determining progress under this contract. Record drawings shall be submitted by the Final Inspection and before final payment can be made.

TP - 01.23 MEASUREMENT AND PAYMENT:

Except for the following items, the cost of all work done by the Contractor as required under Section 01 of the Technical Provisions shall be merged with the pay items defined within the Measurement and Payment portions of other Technical Provisions of this contract.

A. Solid Rock Excavation: Payment for rock excavation shall be at the unit price listed in the Bid Schedule based on the computed number of cubic yards removed. Separate payments will be made between solid and loose rock excavations.

B. Loose Rock Excavation: Payment for loose rock excavation shall be at the unit price listed in the Bid Schedule based on the computed number of cubic yards removed. Separate payments will be made between solid and loose rock excavations.

C. Imported Bedding Material: If imported bedding material is required as fill to replace stony soil (stones less than 1 cy), it shall be considered incidental to pipe installation and no separate payment shall be made. If imported bedding material is required to replace unsuitable native material (weak structural properties), payment shall be at the unit price shown on the Bid Schedule based on the volume of compacted bedded material as computed by the Owner or Owner's Representative. Payment shall include the necessary over-excavation and the furnishing, installing, grading and compaction of the bedding. No payment shall be made for any imported material not approved by the Owner.

D. Dewatering: Dewatering shall be based on the actual number of lineal feet completed. Payment for dewatering shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete dewatering installation.

E. Mobilization/Demobilization: Payment for mobilization/demobilization shall be at the unit price listed in the Bid Schedule. 60% of this line item may be requested upon complete mobilization to the job site and the remaining 40% may be requested upon demobilization from the job site.

F. Storm Water Pollution Prevention Plan: Payment for the preparation and implementation of the SWPPP shall be paid on a lump sum basis as shown on the Bid Schedule. Payment shall be full compensation for plan preparation including required revisions for Owner's acceptance, updates to the SWPPP during construction, permit application, inspections, installation and maintenance of controls, modification of controls as determined by inspections, removal of pollutants due to failed controls, and permit termination.

G. Seeding: Seeding shall be paid for on a lump sum basis to seed the site in accordance with these specifications. Payment for seeding shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for complete installation.

H. Exploratory Time: Exploratory time shall be measured on an hourly basis for an actual period spent on locating the existing utility line exceeding two (2) hours. Contractor shall follow these steps:

1. Call the representative from the operating utility and make every effort to locate the existing utility line prior to excavation.
2. Locate the existing utility line for two hours at the Contractor's expense.
3. If the Contractor is unable to locate the existing utility line within two hours, the Contractor shall notify the Owner or Owner's Representative and both agree upon a start time. The start time shall be recorded. When the Contractor locates the existing utility line, the end time shall be recorded.

If the Contractor fails to notify the Owner or Owner's Representative when the Contractor will start locating the existing utility line, the Contractor will not be compensated. Payment for exploratory time shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for locating the existing utility line.

I. Record Drawings: The record drawings shall be submitted with or prior to submitting the final invoice and shall be reviewed and approved prior to making the final payment. Payment for this item shall be merged into the other pay items.

SUBMITTAL REVIEW FORM
SECTION 01 - TRENCH EXCAVATION & BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES

	DATE	INITIALS		
			Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
1.02	Trench Safety Plan, including certified competent person		
1.03	Traffic Control Plan and Right of Way Permit		
1.07	Warning Tape		
1.07	Tracer Wire, Tracer Wire Access Points, and Tracer Wire Splice Kit		
1.07	Utility Line Marker		
1.07	Bollard		
1.07	Metal Marker Post and Stampable Cap		
1.08	Rock excavation methods (Solid and Loose)		
1.08	Blasting License, Credentials and Permits		
1.09	Dewatering procedures		
1.10	Extra Protection (Water Line or Sewer Line)		
1.11	Embedment and Bedding Material		
1.11	Stabilization Material		

1.11	Cement Slurry		
1.12	Soil Testing Lab		
1.12	Standard Proctor Test		
1.12	Density Testing Location Plan		
1.12	Density Test Results		
1.13	Gravel		
1.13	Pavement Patch Mix		
1.17	SWPPP		
1.18	Stake Out Plan, Survey Sub-Contractor		
1.20	Seed, Seeding Method, and Seeding Protection		

Approval:

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 02 - CAST-IN-PLACE CONCRETE

TP - 02.01 SCOPE:

Furnish all labor, materials, equipment, and incidentals as required, and perform all operations in connection with the placement of concrete in accordance with the applicable drawings and these specifications.

TP - 02.02 MATERIALS:

A. Cement: Portland cement shall conform to ASTM C150 Cement, Portland Type I, Type IA, Type II, Type IIA, Type III, or Type IIIA.

B. Concrete: Ready Mix Concrete shall conform to ASTM C94.

C. Aggregate: Aggregate shall be composed of clean, hard, durable, uncoated grains and crushed stone, free from detrimental amounts of clay, dust, soft or flaky particles, loam, shale, schist, slate, alkali, disintegrated stone, organic matter or other deleterious matter. The aggregates shall conform to ASTM C33.

D. Water: All water used for concrete shall be of potable quality.

E. Grading: Exposed horizontal surfaces shall slope approximately 1/8 inch per linear foot downward in all directions from the center.

TP - 02.03 CONCRETE REQUIREMENTS:

Property	**Unit**	**Minimum**	**Maximum**
Cement Factor	(sacks per cu. yd.)	6.0	---
Water-Cement Ratio	(gal. per sack)	---	6.0
Entrained Air	(percent)	4.0	6.0
Slump	(inches)	1.0	4.0
	Compressive Strength		
7 day	(psi)	1,800	
28 day	(psi)	3,000	

Concrete shall be uniformly plastic, cohesive and workable, i.e., can be placed without honeycomb and without voids in the surface. Workability shall be obtained without producing a separation of ingredients. Free water shall not appear on the surface. In general, a minimum amount of water required to produce a workable mixture shall be used.

TP - 02.04 WEATHER:

A. Freezing: No concrete work shall be done if the air temperature is below 40°F, except with the approval of the Owner or Owner's Representative. If approval is given to work, the water and aggregate shall be heated to at least 80°F before mixing. In all cases where the air temperature is predicted to be below 40°F, the concrete shall be insulated for at least 72-hours by insulating blankets, batt insulation with moisture proof covering, layers of dry porous material such as straw, hay, or multiple layers of impervious paper meeting ASTM C 171. No concrete shall be poured against frozen ground. The use of salt or other

compounds to prevent concrete from freezing shall not be permitted. Any work that has been injured by freezing shall be removed and replaced at the Contractor's expense.

B. Ambient Temperature Above 80 °F: The concrete temperature shall not exceed 95 °F, unless appropriate and approved admixtures are provided in the concrete mix. Concrete placement and finishing shall be completed as quickly as conditions permit. The concrete shall be protected against thermal shrinkage cracking due to rapid drops in concrete temperature greater than 40 °F during the first 24 hours. Acceptable protection materials to prevent these drops include: insulating blankets, batt insulation with moisture proof covering, layers of dry porous material such as straw, hay, or multiple layers of impervious paper meeting ASTM C 171. These materials shall not be applied until the concrete surface temperature has become steady or is beginning to decline.

TP - 02.05 CURING:

Fresh concrete shall be adequately protected from heavy rains and mechanical injury. All concrete shall be kept moist and protected from rapid drying or freezing for at least seven days. Concrete surfaces shall be kept moist by spraying with liquid membrane coating. Foundations and thrust blocks may be cured by covering with water saturated soil or backfill. All concrete shall be cured at least 72 hours prior to stripping forms or structural loading. Horizontal surfaces shall be covered with burlap as quickly as it can be safely applied, and then saturated by sprinkling. After 24-hours, burlap may be removed and water applied directly to the concrete surfaces. Suitable plastic covering may be substituted if no detrimental effects occur.

TP - 02.06 TRANSIT MIXED CONCRETE:

Ready-mixed concrete from a central batching plant and mixed in transit will be permitted with the Owner or Owner's Representative's approval. A time stamped plant batch certification sheet shall be provided by the concrete supplier listing the batch components for approval by the Owner or Owner's Representative.

TP - 02.07 FIELD TESTING:

Four test-cylinders shall be taken for each 50 cubic yards of concrete placed or portion thereof. If the Owner or Owner's Representative suspects, by visual inspection, slump, or other tests, that any other concrete appears substandard, additional test cylinders shall be required. The Contractor shall provide cylinder molds at the construction site and shall have the cylinders tested by an approved laboratory, with the Contractor bearing all costs. If any test cylinder falls below 3,000 psi at 28 days, this shall be sufficient cause to reject that portion of concrete. The Contractor shall remove and replace defective concrete with acceptable material at his own expense. The test cylinders shall comply with ASTM C31 for making and curing test specimens in the field.

The Contractor shall also perform one slump test and one air entrainment test for each ready-mixed concrete batch from a truck.

Field testing will not be required for non-structural concrete placement such as pre-cast manhole bases, concrete collars, yard hydrant concrete pads, fence post concrete anchors, monitoring well concrete pads, control panel concrete pads, cleanout collars, manhole collars, and drop manhole concrete encasements.

TP - 02.08 PLACING CONCRETE:

Before placing concrete, the Contractor shall provide 72-hour advance notice to permit proper inspection of forms and reinforcement by the Owner or Owner's Representative.

After completion of mixing, the concrete shall be rapidly conveyed to and deposited in the forms. Consolidate the concrete immediately after placing by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

Concrete shall not be placed against surfaces of absorbent material that are dry and concrete shall not be placed against surfaces that have free water. The concrete shall be placed in such a manner as to prevent excessive crawling and segregation of the aggregate. No concrete shall be used that has partially set before final placing, nor shall retempering of the concrete be permitted. All concrete shall be placed in the forms no more than 90-minutes after mixing.

TP - 02.09 FORMS:

The Contractor shall provide forms that will produce correctly aligned concrete. The centering of the forms shall be true and rigid and thoroughly braced both horizontally and diagonally. Forms shall be sufficiently strong to carry the dead weight of the concrete as a liquid without deflection, and tight enough to prevent leakage of mortar. The inside of forms shall be coated with an approved oil or thoroughly wetted. The Owner or Owner's Representative shall be notified prior to removal of form work.

The final concrete structure shall be inspected for alignment, elevation, and concrete quality. Final concrete structure alignment and elevation shall be checked by use of land surveying instruments.

Should the concrete structure alignment, elevation, and/or quality test results be determined unsatisfactory by the Owner or Owner's Representative, the entire structure or parts of the structure will be rejected. All further alignment or elevation corrections, or any concrete removal and/or replacement, shall be at the Contractor's expense.

Honeycombed and void areas in the concrete shall be removed and patched to produce a sound concrete product by a method selected by the Contractor and approved by the Owner or Owner's Representative.

TP - 02.10 MORTAR:

Mortar shall be made of one part masonry cement, three parts sand, and only a sufficient amount of water to make a workable plastic mix. Retempered mortar shall not be used.

TP - 02.11 GROUT:

Surface aesthethic grout with non-structural or adhesive properties shall be made of one part Portland cement, two parts sand, and only a sufficient amount of water to make a workable plastic mix. Re-tempered grout shall not be used.

TP - 02.12 SLURRY:

Concrete slurry used for road crossings shall meet the requirements of the Federal Highway Administration FP-14 Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, Section 614 Lean Concrete Backfill.

TP - 02.13 MEASUREMENT AND PAYMENT:

Concrete and other work or materials required by this section shall not be measured and paid separately. Rather, they shall be included in the unit or lump sum bid prices of those items shown on the Bid Schedule that require the inclusion of such materials or work, even if not specifically mentioned within the measurement and payment sections of those particular pay items.

SUBMITTAL REVIEW FORM

SECTION 02 – CAST-IN-PLACE CONCRETE

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No. Manufacturer, etc.)	Action by Owner
2.04	Concrete Protection		
2.05	Concrete Compound		
2.06	Concrete Mix		
2.07	Concrete Testing Laboratory		
2.07	Strength, Slump, & Air Test Results		

	Signature	Date:
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 03 - REINFORCING STEEL

TP - 03.01 SCOPE:

Furnish all labor, materials, equipment and incidentals as required, and perform all operations in connection with the placement of reinforcing steel and wire fabric reinforcing, complete, in strict accordance with the applicable drawings and these specifications

TP - 03.02 MATERIAL:

Reinforcing bars shall meet the requirements of the Standard Specifications for Billet-Steel Bar (intermediate grade) for Concrete Reinforcement, ASTM A615. Welded wire mesh shall meet the requirements of the Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement, ASTM A185. The bars and wire mesh shall be placed in accordance with the approved shop drawings. Any excess rust or scale shall be removed by wire brushing prior to concrete placement. The use of cold twisted bars will not be permitted. Wire fabric shall be used only when specified and shall be the type shown on the drawings and approved by the Owner or Owner's Representative.

Tie wire size is shown in the plans and shall conform to ASTM A1064.

TP - 03.03 METHOD OF CONSTRUCTION:

All reinforcement shall be free from dirt, oil, paint, grease, mill scale and loose or thick rust. When bending is required, it shall be accurately done without the use of heat, and bars having cracks or splits at the bends shall be rejected. All reinforcement shall be placed in the exact position shown on the drawings, and shall be securely held in position by wiring to and blocking from the forms, and by wiring together at intersections, such that it will not be displaced during depositing and compacting of concrete. Precast concrete blocks, concrete masonry units, or metal chairs shall be used for supports where applicable. Rock supports will not be allowed.

Placing and fastening of reinforcement in each section of the work shall be approved by the Owner or Owner's Representative before any concrete is deposited in the section. All joints or splices shall be made by using approved clamps, welding or by lapping the ends of the bars a distance of at least 40 times their nominal diameters unless otherwise noted on the plans. Lap adjoining wire mesh by no less than one full mesh and lace securely with wire.

Cutting and bending, placement, welding, handling and storage, and installation of reinforcement shall be in accordance with applicable American Concrete Institution (ACI), American National Standards Institute (ANSI), and Concrete Reinforcing Steel Institute (CRSI) standards.

TP - 03.04 MEASUREMENT AND PAYMENT:

Reinforcing steel shall not be measured and paid separately. Rather they shall be included in the unit or lump sum bid prices of those items shown on the Bid Schedule that require the inclusion of reinforcing steel, even if not specifically mentioned within the measurement and payment sections of those particular pay items.

SUBMITTAL REVIEW FORM, SECTION 03 – REINFORCING STEEL

	Date	Initials		
			Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
3.02	ASTM chemical & physical test certificates		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 04 - WATER TRANSMISSION AND DISTRIBUTION MAIN

TP - 04.01 SCOPE:

The work covered by this Section consists of furnishing all labor, equipment and materials in connection with the construction of water mains, including piping, valves, hydrants, other appurtenances and connection of the water mains to the structures for community water systems, all installed in strict accordance with the plans and technical provisions.

TP - 04.02 GENERAL:

The waterlines shall be constructed in the locations and of the sizes, materials and pressure class shown on the plans, or as directed by the Owner or Owner's Representative. All permits, permissions or other authorizations required by the tribal or municipal utility authority for tapping and connection are the responsibility and cost of the Contractor. Excavation, trenching, backfilling, compaction and any needed dewatering shall be in accordance with Section 01 of these Technical Provisions. Staking, utility locates and existing system abandonment shall be conducted in accordance with Section 01 of these Technical Provisions.

Pipe joints, fitting and appurtenance installation shall be in accordance with the manufacturer's recommendations. All pipes and joints shall be approved by the Owner or Owner's Representative prior to backfilling. The work will not be accepted until satisfactory backfilling, compaction, testing and cleanup is complete. Final grading should prevent surface water runoff from pooling around installed facilities. If the work does not meet the specified requirements of this Section, the Contractor shall remove and replace and re-test, as necessary, at the Contractor's expense. The Contractor shall leave each premise in a neat and orderly condition, restoring it as near as possible to its original condition and to the approval of the Owner or Owners' Representative.

TP - 04.03 MATERIALS:

Materials shall be inspected to verify that they meet these specifications and match the approved submittals. Materials not meeting these requirements shall not be permitted to be installed. Install all materials and equipment in strict accordance with the manufacturer's recommendations, applicable codes and regulations, and these specifications.

The unloading, handling, and storage of the pipe and materials shall be conducted in a safe manner. Handle pipe with padding between metal machinery and pipe. Keep dirt and foreign material away from pipe interiors and sealing surfaces. Lower pipe carefully into the trench without dropping, rolling or dumping the pipe.

A. General: Inspect all materials prior to installation to ensure that they are in new condition. Ensure that pipe, fittings and materials are free from defects and damage at the time of delivery and prior to installation in the trench. Plastic pipe with scratches, gouges, or grooves deeper than 10% of the wall thickness or ultraviolet discoloration shall be rejected. Remove all materials from site that are defective, damaged, used, unsound, or that otherwise do not meet the specifications within 24-hours of discovery.

B. Pipe: All pipe shall be listed under the National Sanitation Foundation (NSF) Part 61. The standard pipe length shall be 20 feet. Each length of pipe shall be clearly marked with the following: Manufacturer, Nominal Pipe Size, PVC Cell Classification, Type PSM PVC Sewer Pipe, ASTM Designation and Pipe Class.

1. Polyvinyl Chloride Pipe (PVC): PVC pipe shall meet the requirements of NSF 14.

a) PVC Pipe and Fittings (2-inch): PVC pipe shall be SDR 21 (200 psi). Each joint of pipe shall carry the NSF seal of approval for pipes for potable water. Pipe shall conform to ASTM D2241 and ASTM D1784. Fittings shall be 2-inch SDR-21 gasketed fittings with the PVC material

conforming to ASTM D1784, NSF 14, joints conforming to ASTM D3139, and gaskets (elastomeric seals) conforming to ASTM F477.

b) PVC Pipe and Fittings (4-inch to12-inch): PVC pipe and joints shall conform to the requirements of ANSI/AWWA C900 DR 18 or C909 DR18 pressure class 235 (minimum), Standard for Polyvinyl Chloride (PVC) Pressure Pipe, with gaskets meeting ASTM F477 joints conforming to ASTM D3139, and gaskets (elastomeric seals) conforming to ASTM F477 or as otherwise defined on the Bid Schedule.

c) PVC Pipe and Fittings (14-inch and larger): All 14-inch and larger PVC pipe shall conform to the requirements of AWWA C905 with gaskets meeting ASTM F477 and joints in compliance with ASTM D3139 and gaskets conforming to ASTM F477.

2. Ductile Iron Pipe (DIP): All ductile iron pipe shall be manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51 for centrifugally cast ductile iron pipe. Pipe shall be manufactured in accordance with ANSI/AWWA C111/A21.11 for rubber gasket joints for ductile iron pressure pipe and fittings.

a) Pipe thickness shall meet the requirements of ANSI/AWWA C150/A21.50 for thickness design of ductile iron pipe.

b) Pipe shall be cement mortar lined and seal coated meeting the requirements of ANSI/AWWA C102/A21.4 for cement mortar lining for ductile iron pipe and fittings for water.

c) Pipe shall have push-on joints, unless otherwise indicated on the plans or in the Bid Schedule.

3. High Density Polyethylene Pipe (HDPE): All HDPE used in constructing the water main shall conform to Section 28 of these Technical Provisions.

C. Ductile Iron Fittings: Ductile iron fittings shall meet ASTM A536, 350 psi pressure rating for 2-inch to 24-inch diameter fittings in accordance with ANSI/AWWA C153/A21.53. Ductile and gray iron fittings shall conform to AWWA C110 and AWWA C111. Refer to manufacturer's recommendations for allowable deflection of fittings.

Flanged ends on fittings shall meet ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. Fittings shall be cement mortar lined in accordance with ANSI/AWWA C104/A21.4 or shall be epoxy lined. Fittings shall be coated with an asphaltic seal coat on the outside only in accordance with ANSI/AWWA C153 and C104/A21.4 and referenced in ANSI/AWWA C153/A21.53. Gaskets shall be styrene butadiene rubber (SBR) meeting ANSI/AWWA C111/A21.11. Fittings shall have t-bolts and nuts manufactured of low alloy steel meeting ANSI/AWWA C111/A21.11 and ASTM A307. Fittings shall be listed under the National Sanitation Foundation (NSF) Part 61.

D. Mechanical Joint Restraints:

1. General: Mechanical joint restraints shall be manufactured of DI in accordance with ASTM A536 with the following additional requirements or exceptions. Joint restraint thrust bolts and nuts shall be ¾" low alloy (mild) steel. Mechanical joint restraints shall be incorporated into the design of a follower gland. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts in accordance with AWWA C111 and C153. A fully restrained joint shall have the same working pressure rating as the pipe itself.

2. Design: The restraint mechanism shall consist of numerous individually activated gripping surfaces to maximize restraint capability. The gripping surfaces shall be wedges that are designed to spread the bearing surfaces on the pipe. Twist-off nuts, sized the same as tee-head bolts, shall be used to ensure the proper actuating of restraining devices. When the nut is sheared off, a standard hex nut shall remain.

3. Pressure Rating: The mechanical joint restraint device shall be as listed below:

Type of Pipe	Sizes (Inches)	PSI	Safety Factor
DI	3 to 16	350	2
	20 to 36	250	2
PVC	Various	Equal to that of the pipe being used	2

4. Acceptable Models and Manufacturers:

Mechanical Joint Restraint – PVC Pipe		
Manufacturers	**Models**	**Sizes (Inches)**
EBAA Iron, Inc.	Megalug 2000 PV Series	4 to 20
Sigma Corporation	One-Lok SLCE Series	4 to 20
Star Pipe Products	StarGrip 4000 Series	4 to 20

Mechanical Joint Restraint – DI Pipe		
Manufacturers	**Models**	**Sizes (Inches)**
EBAA Iron, Inc.	Megalug 1100 Series	3 to 24
Romac Industries	RomaGrip	3 to 24
Sigma Corporation	One-Lok SLDE Series	3 to 12
Star Pipe Products	StarGrip 3000 Series	3 to 24
Uni-Flange (Ford)	UFR 1400 Series	3 to 24

Bell-Spigot Restraint – PVC Pipe		
Manufacturers	**Models**	**Sizes (Inches)**
EBAA Iron, Inc.	Series 1500 TD	4 to 12
	Series 1500	4 to 12
Ford Meter Box	Ford 1390	4 to 12
Star	Series 1100	4 to 12

Bell-Spigot Restraint – DI Pipe		
Manufacturers	**Models**	**Sizes (Inches)**
American	Fastgrip Gasket	4 to 16
EBAA Iron, Inc.	Megalug 1700 Series	3 to 20
	Series 1500 TD	4 to 12
Star Pipe Products	StarGrip 3100P Series	3 to 20
U.S. Pipe	Field Lok Gasket	4 to 16

Bolt-Through Mechanical Joint Restraint
Foster Adaptor

Hydrants and Valve Restraint – DI Pipe
Mueller Aquagrip Restraint Device

E. Gate Valves: Gate valves shall conform to the latest revision requirements of AWWA C509 or C515 for resilient-seated gate valves. All valves shall be equal to the AVK Series 25 or 65 or the American Flow Control Series 2500, or approved equal.

1. General:

   a) Gate valves shall be of cast iron or ductile iron body construction, bronze mounted, solid wedge, resilient seal, with a 2-inch square stem-operating nut, 200 psi operating pressure or higher, counterclockwise opening, inside screw, with O-ring seals.

   b) The Contractor shall provide to the Owner, at no additional cost, one gate valve wrench 6 foot long with "T" handle.

   c) Mechanical restraint joints shall be used unless otherwise indicated.

   d) When a valve is required near a fitting, such as a tee, the valve shall be secured with mechanical joint restraints to the fitting.

2. Markings: The name, monogram or initials of the manufacturer shall be legibly cast on the valve body. The make of valves furnished shall be easily identifiable by catalog numbers.

3. Valve Stems: All valves shall be furnished with valve stems made from 300 or 400 series stainless steel and shall be non-rising stems (NRS).

4. Lining: All interior ferrous surfaces exposed to fluid flow shall be epoxy coated to a minimum dry film thickness of 6 mils. Epoxy linings shall be factory applied by an electrostatic or thermosetting process in accordance with the manufacturer's printed instructions. The epoxy materials used shall be 100% powder epoxy or liquid epoxy that conforms to the requirements of AWWA C-550.

5. Coating: All exterior ferrous surfaces, except finished or bearing surfaces, shall be factory coated with two coats of asphaltic varnish conforming to Federal Specifications TT-V-51c, or shall be epoxy coated as required above for interior surfaces.

F. Gate Valve Boxes: All gate valves shall be provided with a $5^{1}/_{4}$-inch inner-diameter shaft, 2-piece sliding extension type cast iron valve box. The gate valve box shall be Tyler Union 6855 Domestic Heavy Duty, or approved equal.

1. General:

   a) All boxes shall extend from the body of the valve to the finished grade.

   b) The vertical column of the box shall be designed so that the top section may be adjusted while in position.

   c) The cast iron lid shall be 5-1/4" Domestic Heavy Duty Drop Lid with a pentagon nut and the word "WATER" cast on the lid.

   d) For the concrete collar, the concrete shall conform to Section 02 of the Technical Provisions and the reinforcing steel shall conform to Section 03 of the Technical Provisions.

2. Extension stems: When the valve operating nut is more than four feet below the top of the valve box, stainless steel extension stems equal to TROY VALVE Stainless Steel Valve Extension Stems shall be provided. The top of the extension shall be 3 ½ to 4 feet below the top of the valve box.

3. Debris Cap:

   a) Each valve box shall have a debris cap designed to prevent debris such as dirt and sand from passing around the cap and down into the valve housing and installed just below the valve cover.

   b) The cap shall be held in place by a mechanism which will not damage the valve housing.

   c) The cap must withstand, without slippage, a minimum vertical force of 50 pounds at a loading rate of 1 inch/minute.

   d) The debris cap and bottom of valve cover shall be separated by a minimum of 1 inch and not to exceed 2 inches.

   e) The cap shall be manufactured with corrosive-resistant material and fit the valve box's 5¼" diameter shaft. Caps shall be debris cap model number DC455 or DC457 manufactured by SW Services, LLC or approved equal. The debris cap shall be installed according to the manufacturer's recommendations.

G. Combination Air Valve: The valve shall have the features of both an air release and an air/vacuum release valve. The valve shall have either a single or dual body with a large orifice. The valve shall be an ARI D-040, or approved equal.

1. General:

   a) Size range of the valve shall be from 1-inch to 2-inch, or as specified on the design plans.

   b) The body and all operating parts shall be made of high strength corrosion-resistant materials.

   c) Working pressure shall be a minimum of 250 psi.

   d) The valve shall have the ability to automatically release small pockets of air during normal operation.

   e) The valve shall have the ability to automatically discharge or admit large volumes of air during filling and draining.

   f) Utility marker shall conform to Section 01 of the Technical Provisions.

   g) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.

2. ARV Vault:

   a) Diameter of the vault shall be 48-inches or as shown on the design plans.

   b) Vault shall be composed of precast reinforced manhole barrel sections and shall have a 28-day compressive strength of at least 3,000 psi.

   c) Minimum height of sections shall be 24 inches. If two or more manhole sections are used to construct the vault, the joints between precast manhole sections shall be sealed with Ram Nek bituminous rope type sealer, or equal.

   d) The sections shall be grouted to a smooth finish on the interior and exterior of the manhole.

   e) Grout for jointing shall be as specified in Section 02 of the Technical Provisions.

   f) All connections between pipe and manhole walls shall be sealed with non-shrinking grout.

g) The depth of the vault from interior floor to the underside of the access hatch shall not exceed 48 inches.

h) If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at the outlet end (10-foot minimum length) and where bury depth is less than 1-foot. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.

3. Vault Concrete Collar and Vault Lid:

a) Concrete collar shall be reinforced with #4 steel hoops centered horizontally and vertically.

b) Vault lid (access hatch cover) shall be a Halliday Series R1R Model R1R48, or approved equal.

c) Opening of the lid shall be over the larger area of the vault as shown on the detail.

d) The frame edge for the vault lid shall be coated with bituminous coating where in contact with the concrete vault for proper sealing.

e) Four (4) stainless steel lag-bolts with a minimum bolt diameter of 3/8-inch shall be used to mount the frame to the inside wall of the vault. An appropriate concrete anchoring system such as expanding lead lag-shields shall be used. The bolts shall be installed in an equally spaced, four quadrant pattern as shown on the plans or directed by the Owner's Representative.

f) The underside of the lid shall be insulated in cold climates, as shown on the design plans or directed by the Owner or Owner's Representative. The insulation can be field installed or can be factory installed by the manufacturer. Field installed insulation shall be completed using 2-inch polystyrene insulation board with appropriate compatible adhesive or an approved securing mechanism, as directed by the Owner's Representative.

4. ARV Inlet (Riser) and Outlet (Discharge) Piping:

a) Material of the inlet and outlet pipe shall be rigid and non-corrodible. Joining of dissimilar metals should be avoided. If approved by the Owner and show in the plans, dielectric unions may be installed, if dissimilar metals are used. The material of the inlet and outlet pipe shall be as specified on the design plans and detail drawings.

b) The pipe material from the tee/saddle or compression fitting elbow at the bottom of the vault, to the Schedule 80 PVC union shall be brass. The pipe material from the Schedule 80 PVC union to the outlet end of the gooseneck shall be galvanized steel. For the Horizontal Offset Option, the pipe material from the water main to the bottom compression fitting elbow in the vault shall be PE 4710. Appropriate reducers shall be used for the outlet or inlet of the ARV piping, as shown on the design plans and detail drawings.

c) No pipe, valve or fitting on the inlet or outlet line shall be smaller than the ARV inlet or outlet.

d) The stabilizing bracket for the riser piping shall be a Unistrut P1381 Angular Fitting, Unistrut P1000 1 5/8" Solid Channel and Unistrut Cush-A-Clamp, or approved equal.

e) Full port true union type ball valve and fittings shall match the material and size of the riser pipe.

f) Sample tap shall be non-threaded cross wheel style, NSF 61 approved. The Contractor shall provide a valve operating stem key for the sample tap to the operating utility.

g) The above grade outlet of the discharge line (air relief line) shall be a screened return bend as shown on the detail drawing. The screen shall be #24 mesh non-corrodible copper, bronze, or brass.

h) When the ARV is located directly above the water main connection, the connection shall be made with either a tee or a tapping saddle. The tee and reducer shall meet the requirements of TP 04.03.C. The saddle and corporation stop shall be meet the requirements of TP-05.

i) When the ARV is offset from the water main connection, the corporation stop, saddle, PE pipe and fittings shall meet the requirements of TP-05.

H. Blow-off Hydrant Assembly: Blow-off shall be non-freezing, self-draining type, with 6-inch or 4-inch MJ inlet, non-turning operating rod and shall open to the left (counter clockwise). The blow-off assembly shall be a Kupferle Foundry model 7600-4", or approved equal.

1. General:

a) All working parts shall be brass and shall operate with a 2-inch gate valve wrench.

b) When open, valve shall be completely unobstructed, and drain hole shall be covered.

c) Inlet shall be 6-inch or 4-inch FIP, as shown on the plans and details.

d) Outlet shall be 4-inch FIP.

e) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.

2. Portable Discharge Riser: 4-inch aluminum piping and fittings, 4-inch camlock male to female NPT (quick connect), dimensions and configuration shown on the detail drawings. Portable discharge riser to be constructed by the Contractor and provided to the Owner.

3. Fire Hose and Quick Connect Adapter: 4-inch single jacket fire hose, 50 feet, minimum, 125 psi service pressure. Adapter: stainless steel 4-inch male camlock to male NPT (quick connect). Hose to be provided by the Contractor to the Owner.

4. Blow-off Valve Vault and Cover: Vault shall be reinforced concrete pipe, 24-inch inside diameter. Riser grade rings with tar sealer may be used. Frame and cover shall be heavy duty cast iron, concealed pickslots, gasketed, with Penta Head security bolts, centered over the valve box, stamped "WATER" on top of the lid, Neenah 1295B, or approved equal. Contractor shall provide a Penta Head Wrench and Socket to the Owner.

5. Drain Pipe: If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at outlet end and where bury depth is less than 1-foot. The DI pipe shall be a minimum of 10 feet long. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.

I. Tapping Sleeves: Tapping sleeves shall be stainless steel with mechanical joint seals and class 125 outlet flange, Mueller H-304SS, or approved equal.

J. Warning Tape and Tracer Wire: Warning Tape and Tracer Wire (including tracer wire access boxes and tracer wire splice kits) shall be in accordance with Section 01 of the Technical Provisions.

K. Markers and Bollards: Markers and Bollards shall be in accordance with Section 01 of the Technical Provisions.

L. Filter Fabric: Class A 6 oz. nonwoven or woven polypropylene or polyester fabric.

M. Fire Hydrants: Conform to AWWA C502.

1. New hydrants shall conform to the requirements of AWWA C502 (AWWA Standard for Dry Barrel Fire Hydrants).

2. Unless otherwise indicated, hydrants shall be equipped with two National Standard 2 ½-inch hose nozzles and one National Standard 4 ½-inch pumper nozzle.

3. The hydrant inlet connection shall be sized for a 6-inch pipe. The hydrant valve shall open against line pressure and shall be no less than 4 ¼ -inches.
4. The bury depth shall be adequate to maintain the minimum cover over the pipe per TP-4.04.C.
5. The hydrant shall be designed so that all renewable parts can be changed without digging up the hydrant.
6. Hydrants shall be equipped with traffic safety flanges designed to break away in the event of horizontal impact.
7. The operating nut and nuts on each hydrant cap shall be 1 ½-inch National Standard pentagon nuts. Direction of opening shall be counterclockwise, as shown by an arrow cast on the hydrant.
8. Exterior shop coating of the hydrant top section shall be chrome yellow.
9. The hydrant shall have weep holes to allow the hydrant to drain, unless directed otherwise by the Owner's Representative.
10. Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.
11. Acceptable models: Mueller Super Centurion 250, Waterous (American Flow Control) WB-67, or approved equal.

TP - 04.04 PIPE CONSTRUCTION REQUIREMENTS:

Trenching, backfilling and compaction operations shall be performed as specified in Section 01 of the Technical Provisions. Pipe and fittings shall be installed in accordance with the manufacturer's printed specifications and instructions, to the standards of AWWA for installing the type of pipe used, and in accordance with this technical provision.

A. General:

1. Install water mains and appurtenances in the locations and of the sizes and materials shown on the plans and Bid Schedule.
2. Pipe, fittings, valves, and hydrants shall be carefully handled to avoid damage.
3. Contractor to provide staking in accordance with Section 01 of these Technical Provisions.
4. Locating existing utilities shall be the responsibility of the Contractor in coordination with a representative from the operating utility.
5. Existing water mains shall be properly abandoned in place and all facilities located at ground surface shall be removed and disposed of at the Contractor's expense.

B. Pipe Protection:

1. No pipe shall be laid when trench or weather conditions are unsuitable for such work.
2. Under no circumstances shall pipe be laid in water. Trenches shall be kept free from water at all times.
3. The interior of all pipe shall be thoroughly cleansed of all foreign matter before being lowered into the trench and shall be kept clean during laying operations by use of plugs or other approved devices.
4. As the work progresses, the interior of the pipe shall be cleared of all dirt and superfluous materials of every description.
5. Promptly remove all debris that enters the pipeline and swab the area with 1% hypochlorite solution.

6. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed with a water tight plug so that no trench water, rodents, earth, or other substances will enter the pipe or fittings.

C. Pipe Installation:

1. All pipe shall be laid to the depth shown on the plans, or at such depths as may be established by the Owner or Owner's Representative in order to connect the new pipe to the existing water mains.
2. Unless otherwise specified, the pipe shall be laid to a depth that will provide for a cover of at least 3 feet from the top of the pipe to finished grade.
3. Each section of pipe shall rest upon undisturbed earth, or compacted bedding materials, with recesses excavated to accommodate joints.
4. When trench bottom is soft and cannot support the pipe, a further depth and/or width shall be excavated and refilled to grade with stabilization and bedding material as specified in Section 01 of these Technical Provisions.
5. Joints with pipes of differing materials shall be made with appropriate adapters approved by the Owner or Owner's Representative, but in no case will threading of the PVC pipe wall be allowed.
6. Where required, PVC pipe shall be cut square using a powered cutoff saw, carpenter's fine tooth handsaw, or hacksaw. Once cut, the pipe shall be machine or hand beveled to give a one-half inch tapered end.

D. Pipe Deflection:

1. Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflecting the joints.
2. The amount of deflection at each pipe joint shall not exceed the manufacturer's printed recommended deflections.
3. When rubber gasketed pipe is laid on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wider on curves for this purpose.
4. Any pipe that has its grade or joint disturbed after laying shall be taken up and relayed.

E. Backfill and Acceptance:

1. The Contractor shall make every effort to backfill all excavation by the end of each workday.
2. Work covered by this section will not be accepted until the backfilling, compaction and testing connected with the work has been completed satisfactorily.
3. Any section of water main that is found to be defective in material, alignment or joints before acceptance shall be corrected to the satisfaction of the Owner's Representative.
4. Any section of pipe already laid and found to be defective shall be taken up and replaced with new pipe without additional expense to the Owner.

F. Mechanical Joint Restraints: MJ Restraints shall be installed at all bends, caps, tees, crosses, valves, fire hydrants and flush hydrants (blowoff valve assemblies). Pipe joints adjacent to restrained bends and fittings shall be restrained in accordance with the plans and details.

1. General:
   a) Mechanical joint restraints shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly as well as allowing joint deflection after assembly.

b) Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.

2. Special Anchoring Retainer Glands:

a) Install in accordance with manufacturer's recommendations.

b) Fully restraint all joints within 20 feet of a fitting with appropriate restraint. Owner or Owner's Representative may specify that an additional restraint be used for pipe sections near critical fittings.

G. Concrete Thrust Blocks:

1. Thrust Blocks:

a) Concrete thrust blocks shall be used on 2 inch PVC pipe, as shown in the plans.

b) Concrete thrust blocks shall not be used on any water pipe greater than 2 inches in diameter unless specified and approved by the Owner or Owner's Representative and shown on the plans or detail drawings.

c) When thrust blocking is approved by the Owner's Representative, concrete blocking shall bear against solid undisturbed earth at the sides and bottom of the trench excavation and shall be shaped so as not to block weep holes or obstruct access to the joints of the pipe or fittings.

d) Concrete shall not come into direct contact with mechanical joint restraints, if necessary, polyethylene wrap shall be used as a barrier.

2. Concrete:

a) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.

b) The concrete shall have minimum 28 day compression strength of 3,000 psi.

c) The concrete shall not cover nuts and bolts of joints or fittings.

d) Polyethylene wrap shall be placed on fitting bolts to prevent hardening of concrete on connections.

e) Under no circumstances shall concrete thrust blocks be allowed on vertical bends in lieu of mechanical restrained joints.

H. Warning Tape: Warning Tape shall be installed on all water mains in accordance with Section 01 of the Technical Provisions.

I. Tracer Wire: Tracer Wire (including tracer wire access boxes and tracer wire splice kits) shall be installed on all water mains in accordance with Section 01 of the Technical Provisions.

TP - 04.05 WATER AND SEWER LINE SEPARATION REQUIREMENTS:

Water lines located near sewers present conditions for serious potential cross contaminations. Protection from cross contamination can be provided by separation of the facilities and use of special piping materials. Water and sewer line separation requirements shall strictly adhere to the requirements set forth in Section 01 of these Technical Provisions.

TP - 04.06 INTERCONNECTIONS TO EXISTING MAINS:

A. Interconnections:

1. An interconnection is the connection of a new pipeline to an existing pipeline.

2. An interconnection includes excavation, backfill, compaction, tapping sleeve, adapters, mechanical joint restraints, random lengths of pipe and any other supplies and materials required.

3. Interconnections do not include connections within the new work or service connections. Only those connections of new water mains to existing water mains which require that the existing main be cut or tapped are considered interconnections.

4. Connections to existing valves, fittings, or pipe ends which have been plugged or capped are not considered interconnections. Removal of the plugs, caps, and thrust blocks is considered incidental to normal installation of the new pipe.

5. Shutoff of mains will not be permitted overnight, over weekends or on tribal or federal holidays.

6. Only start work when all the materials, equipment and labor are on site. Once work on the connection has commenced, it shall proceed continuously without interruption, and as rapidly as possible until completed.

7. Any joints not pressure tested for leakage shall be visually inspected under system pressure prior to backfilling. Visual inspection of joints shall be completed under system pressure in the presence of the Owner or Owner's Representative. Repair and retest any joint with leakage until no leakage is visible, at no cost to the Owner.

B. Tapping Permit and Schedule:

1. A tapping permit (if required) shall be obtained by the Contractor from the operating utility and all work shall be performed in conformance with approved tapping permit.

2. If a tapping permit cannot be obtained, the time and method of connection to existing water mains shall be approved by both the operating utility and by the Owner or Owner's Representative (when these two entities are not the same) prior to such connections.

3. The Contractor shall notify the Owner or Owner's Representative and operating utility at least two (2) working days in advance of any water service disruption due to shutting off any portion of the existing water main. Each connection with an existing water line shall be made at a time and under conditions which will least interfere with water service to customers affected thereby as authorized by the operating utility and as evidenced by an approved tapping permit. The Contractor shall coordinate with the Owner and operating utility to notify the residents affected by water shutoff of the time and day of shutoff a minimum of two (2) working days in advance.

C. Tapping into Existing Main:

1. Connections to existing mains shall be made as shown on the drawings.

2. If the connection is a dry connection, the tee used shall meet the requirements of TP-04.03C.

3. If the connection is a wet connection, a stainless steel tapping sleeve shall be used. Stainless steel tapping sleeves shall be equipped with a ¾ inch diameter test plug and internal gasket as specified in TP-04.03.I.

4. Tapping valves shall have ends and seat rings of sufficient size to permit the use of full size cutters of either the Mueller, Ford or Smith type tapping machines.

5. Tapping sleeve valves shall be flanged on one end to fit the tapping sleeve and a flange hub-end or mechanical joint on the other.

6. All connections shall be made in a neat and professional manner. Such connections shall be made to the satisfaction of the operating utility and to the Owner or Owner's Representative.

7. Proper tools and fittings to suit actual conditions encountered in each case shall be utilized. The cutting of pipe for inserting fittings or closure pieces shall be done in strict accordance with

recommendations of the pipe manufacturer and without damage to the pipe or coating, and so as to leave a smooth end at right angles to the axis of the pipe.

8. The interconnection shall be marked and shown in the record drawings.

D. Contamination and Disinfection:

1. Great care shall be taken to prevent pipeline contamination when cutting into and making connections with existing pipelines used for the conveyance or distribution of water for domestic or public use.
2. The Contractor shall cooperate with the operating utility in locating services, and shall conduct his/her operations in such a manner that no trench water, mud, or other contaminating substances are allowed to enter the connected line or lines at any time during the progress of the work.
3. Disinfection procedures for connecting to existing mains shall adhere to AWWA C651 Section 4.7, (Disinfection Procedures When Cutting Into or Repairing Existing Mains).
4. The interior of all pipe, fittings, and valves, installed in such connections, shall be swabbed or sprayed with a 1% hypochlorite solution before they are installed, as directed by the AWWA standard referenced above.
5. All fittings and appurtenances removed in the connection process shall remain the property of the operating utility unless specified otherwise.

E. Provisions for Asbestos-Cement Pipe:

1. If Asbestos-Cement (AC) Pipe is being replaced, the AC pipe shall be abandoned in place.
2. The project may include taps/cuts into the existing AC pipe. Other unexpected or unavoidable breaks into the existing AC pipe are possible.
3. The Contractor shall comply with all applicable Federal, State, Local, EPA, OSHA, and Arizona, Nevada, California and Utah Departments of Transportation regulations pertaining to exposure to and handling, containment, transport, and disposal of asbestos material.
4. If the bidding Contractor is not licensed to perform these services in the state the project is being constructed, the Contractor shall retain the services of a licensed Asbestos Abatement sub-contractor to perform said services.
5. Further, the Contractor/Sub-Contractor must utilize the services of a commercial hauler that is registered with the respective state's environmental regulatory agency to transport asbestos. The Contractor/Sub-Contractor must dispose of any asbestos waste material generated as a result of the construction project at a solid waste facility authorized for asbestos waste disposal.
6. The Contractor, per OSHA requirements, must train field personnel in the identification of asbestos containing material.
7. The Contractor must submit the following items with the bid:
    a) Name and license number of the Asbestos-Abatement Contractor that will be responsible for the work described above.
    b) References (including the owner's name, address and phone number) for at least five comparable projects performed by the Asbestos-Abatement contactor.
    c) A work plan describing work procedures, equipment to be used, transportation procedures and final disposal facility for asbestos material.
    d) A health and safety plan which includes air-monitoring procedures as required by OSHA.

TP - 04.07 SETTING GATE VALVES AND BOXES:

A. General:

1. Install valves at locations indicated on the plans
2. Valve installation shall be as per these specifications and as shown on the detail drawings.
3. All valves, including gate valves, air release valves, and blow-off assemblies, shall be set, jointed and restrained to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished.
4. Before installing the valve assembly, care shall be taken to see that all foreign material and objects are removed from the interior of the valve.

B. Setting Valves and Valve Boxes:

1. Valves and valve boxes shall be set plumb and valve boxes shall be placed over the valve or valve operator in such a manner that the valve box does not transmit shock or stress to the valve.
2. Support gate valves on a 4-inch concrete block set on compacted base during assembly and fully restrain the valve to the water main piping as shown on the detail drawings.
3. Center the valve box over the valve nut.
4. Backfill shall be placed and compacted around the valve box. The valve box shall be maintained plumb and centered over the valve nut during backfilling and compaction.
5. The valve shall be opened and closed to verify that all moving parts are in working order.
6. The cast iron valve box cover shall be set flush with elevated concrete collar or flush with the road surface.
7. Install a debris cap in the valve box meeting the requirements of TP 04.03.F.3 and as shown in the detail drawing.

C. Concrete Collar:

1. After installing the gate valve box, the Contractor shall properly compact the area around the gate valve box prior to installing the concrete collar to ensure that there is no settlement.
2. A 32-inch diameter OR a 24-inch square by 4-inch thick reinforced concrete pad shall be poured around each valve box as shown on the plan and detail drawings or instructed by the Owner or Owner's Representative.
3. A tracer wire access box shall be set in the concrete collar and next to the valve box with the tracer wire routed and connected as shown in the detail drawing.
4. Before the concrete has set, the Contractor shall neatly scribe in the concrete pad the size of the valve, material of pipe and orientation of the pipe with two arrows.

D. Valve Markers:

1. For valves outside of the right of way, the Contractor shall install two offset permanent Metal Marker Posts for all water main valves installed under this contract.
2. The marker posts shall be equidistant (4 feet typical) at a 45 degree angle from the valve to the main.
3. Set marker post with 36-inches of post above grade with label facing roadway and valve between roadway and post.

4. Stencil the size of the valve and the distance to the valve legibly on the aluminum cap. Dimensions and thickness shall meet requirements shown in applicable TP 01 Detail. Metal marker post shall meet the requirements of and be installed in accordance with Section 01 of these Technical Provisions.

5. For valves within the right of way, the Contractor shall install a Utility Line Marker to locate the valve. Utility line markers shall meet the requirements of and be installed in accordance with Section 01 of these Technical Provisions.

TP - 04.08 SETTING COMBINATION AIR VALVES AND VAULTS:

Combination air valves shall be installed in accordance with the manufacturer's printed specifications and instructions. The air valve vault shall be installed in accordance with the applicable sections of TP-01.

A. General:

1. The air release valve and vault shall meet the requirements of TP 04.03.G.

2. Install air release valves and vaults at locations indicated on the plans and as shown in the detail drawings.

3. All air release valves shall be set, jointed and restrained to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished.

4. Before installing the valve assembly, care shall be taken to see that all foreign material and objects are removed from the interior of the valve.

5. Utility marker shall be installed as shown on the detail drawing and in accordance with TP-01.

B. Setting Vault:

1. Vault shall be set plumb and level on solid concrete masonry blocks and gravel base as shown on the detail drawings. The diameter of the gravel base shall be 6-feet minimum. Gravel shall be placed below the vault and in the vault to the depth shown in the detail drawings.

2. If a drain pipe is shown in the plans, the depth of the gravel below the vault shall be 6-inches minimum. If there is not a drain pipe is shown in the plans, the depth of the gravel below the vault shall be 12-inches minimum.

3. Manhole sections, and adjustment rings if required, shall be grouted in place when the manhole is constructed. The grout shall be spread evenly over the entire mating surface. The maximum number of adjustments rings shall be indicated on the plans. The jointing and sealing materials shall be approved by the Owner or Owner's Representative prior to installation.

4. Backfill shall be placed and compacted around the vault. The vault shall be maintained plumb during backfilling and compaction.

5. Penetrations in the vault walls shall be made as shown in the detail drawings. All vault penetrations shall be sealed with approved grout material.

C. Concrete Collar:

1. After installing the concrete vault, the Contractor shall compact the area around the vault prior to installing the concrete collar to ensure that there is no settlement.

2. A 12-inch wide by 6–inch thick (minimum) reinforced circular concrete pad shall be poured around the vault as shown on the plan and detail drawings or as instructed by the Owner or Owner's Representative.

3. The concrete collar shall have a minimum slope of 1/12 away from the vault.

4. The above grade galvanized outlet piping shall penetrate the concrete collar as shown on the detail drawing. The penetration shall be sealed with approved grout.

5. The vault lid shall be securely bolted to the inside wall of the vault per the manufacturer's recommendations. The lid shall be oriented, bolted and sealed in accordance with TP 04.03.G.3. The lid shall be set 4-inches above finished grade with the concrete collar sloping as shown on the detail drawing. A pad lock shall be provided with the lid and keyed as requested by the operating utility.

D. Setting Valve and Piping:

1. The water main line shall be tapped at the location shown on the plans or as instructed by the Owner or Owner's Representative.

2. The inlet line shall be connected to the water main using a water tight connection as shown on the plans. The Contractor shall use the approved connecting fittings including tees, reducers, service saddles, corp stops and piping. Mechanical restraints shall be used as necessary to secure the connection.

3. Where the air release valve and vault are offset horizontally from the water main, the horizontal sections of piping shall have a minimum of 1% slope upwards to allow for the upward movement of air from the water main.

4. The size of the air release valve and fittings, as well as the inlet and outlet piping for the valve shall be as sized by the Owner's Representative and as indicated on the plans.

5. The location and configuration of the air release valve and fittings, as well as the inlet and outlet piping for the valve shall be as indicated on the detail drawings. The riser piping assembly shall be located 12-inches to 18-inches from the vault wall.

6. The internal vault piping shall be supported with a rigid non-corrosive bracket assembly as shown in the detail drawings. This bracket shall be anchored to the internal concrete vault wall with the specified concrete anchor bolts and concrete anchoring system per TP 04.03.G.3.

7. Vinyl tape shall be wrapped around all galvanized steel pipe that is in contact with soil or concrete.

8. The ball valve, sample tap and air release valve shall be tested after installation to verify that all moving parts are in working order.

E. Drain Pipe:

1. The drain pipe shall only be installed if depicted on the plans (where the vault can drain to daylight).

2. The drain pipe shall be constructed to the alignment and length shown on the plans. The drain pipe shall be constructed as shown in the detail drawings.

3. Excavation, backfilling and compaction for the installation of the drain pipe shall meet the requirement of TP 01.

4. The inlet invert of the drain pipe shall be set at the top of the gravel in the vault. The drain pipe inlet edge shall be flush with the interior wall of the vault.

5. The outlet shall be screened per the detail drawings. The outlet screen shall be secured to the end of the drain pipe using the appropriate ductile iron fittings specified in TP 04.03.G.2.h. The outlet screen shall be wire brushed, sprayed with rust neutralizer and then coated with epoxy paint to protect the screen against corrosion.

6. Rip rap shall be installed for erosion protection around the drain pipe outlet.

TP - 04.09 SETTING BLOW-OFF HYDRANT ASSEMBLIES AND VAULTS:

Blow-off hydrants shall be installed in accordance with the manufacturer's printed specifications and instructions. The vault shall be installed in accordance with the applicable sections of TP-01.

A. General:

1. The hydrant shall meet the requirements of TP 04.03.H.
2. Install blow-off hydrants and auxiliary gate valves at the locations indicated on the plans and as shown on the detail drawing.
3. Utility marker shall be installed as shown on the detail drawing and in accordance with TP-01.
4. The hydrant and auxiliary gate valve shall be tested upon completion.
5. The portable discharge riser shall be constructed per TP 04.03.H.2 and shall be provided to the Owner.

B. Auxiliary Gate Valve and Valve Box:

1. The auxiliary gate valve and valve box shall be installed in accordance with TP 04.07. The concrete collar around the auxiliary gate valve and valve box shall be installed in accordance with TP 04.07.C and the drawings.
2. The auxiliary gate valve and valve box shall be located adjacent to the blow-off hydrant per the detail.
3. The pipe length and material type between the blow-off hydrant and the auxiliary gate valve and between the auxiliary gate valve and the water main shall be as designated on the plans and details.
4. Fully restraint joints between the water main tee and the auxiliary gate valve, and between the auxiliary gate valve and the blow-off hydrant.
5. Under no condition shall the diameter of the auxiliary pipe and auxiliary gate valve be less than 4-inches for blow-off hydrants. The pipe and auxiliary valve size shall match that of the blow-off hydrant inlet, as shown on the drawings.
6. Tracer wire and tracer wire access box shall be installed in accordance with the detail drawing and the provisions of TP 01.
7. Rip rap consisting of a minimum 4-inch to 6-inch angular diameter shall be compacted around concrete collar. The rip rap shall be placed around the collar at the required distance and thickness provided in applicable detail. Filter fabric shall be installed between rip rap and native soil as shown in details.

C. Installing Blow-off Hydrant:

1. Blow-off Hydrants shall stand plumb and shall have their nozzles pointed vertically upwards. The hydrant shall be set centered within the concrete vault.
2. Hydrant shall be restrained to the auxiliary pipe according to the manufacturer's recommendation. Contractor shall provide the required bolts, nuts and gaskets for the mechanical joint connection (MJ DI Transition Accessory Pack with Gland) and shall torque the bolts according to manufacturer's recommendation.
3. The hydrants shall be set so that the top of the discharge riser is 12-inches max from the top of the vault cover.
4. The hydrant interior shall be free of all dirt or foreign matter before installation.

D. Hydrant Base:

1. Set hydrant on compacted gravel base and on solid concrete blocks as shown in the detail drawing.

2. A gravel seepage area (drain pit) shall be provided around the weep hole near the hydrant. Gravel shall be installed as per the detail drawing.

3. A suitable concrete thrust block shall be constructed at the base of the hydrant in accordance with the detail drawings. Once the hydrant is set, concrete shall be poured against undisturbed earth in such a manner that the weep hole is kept free from all concrete or mortar. If the weep hole is covered either partially or wholly, the hydrant shall be cleaned in place and the gravel and concrete removed and replaced with new gravel and concrete.

4. Filter fabric shall be placed 4-inches below the top of the gravel drain pit as shown on the detail drawing.

E. Setting Vault:

1. Vault shall be set plumb and level on solid concrete masonry blocks and gravel base as shown on the detail drawings. Gravel from the drain pit shall extend into the vault to the depth shown in the detail.

2. Penetrations in the vault walls (if depicted in the plans) shall be made as shown in the detail drawings. All vault penetrations shall be sealed with approved grout material.

3. Backfill shall be placed and compacted around the vault. The vault shall be maintained plumb during backfilling and compaction.

F. Concrete Collar:

1. After installing the concrete vault, the Contractor shall compact the area around the vault prior to installing the concrete collar to ensure that there is no settlement.

2. A 6-inch wide by 6–inch thick (minimum) reinforced circular concrete pad shall be poured around the blow-off vault as shown on the plan and detail drawings or instructed by the Owner or Owner's Representative.

3. The concrete collar shall have a minimum slope of 1/12 away from the vault.

4. The cast iron frame and cover shall be anchored to the concrete collar and installed per the manufacturer's recommendations. The base of the frame shall be set 2-inches above finished grade.

5. Rip rap consisting of a minimum 4-inch to 6-inch angular diameter shall be compacted around concrete collar. The rip rap shall be placed around the collar at the required distance and thickness provided in applicable detail. Filter fabric shall be installed between rip rap and native soil as shown in details.

G. Drain Pipe:

1. The drain pipe shall only be installed if depicted on the plans (where the vault can drain to daylight).

2. The drain pipe shall be constructed to the alignment and length shown on the plans. The drain pipe shall be constructed as shown in the detail drawings.

3. Excavation, backfilling and compaction for the installation of the drain pipe shall meet the requirement of TP 01.

4. The inlet invert of the drain pipe shall be set at the top of the gravel in the vault. The drain pipe inlet edge shall be flush with the interior wall of the vault.

5. The outlet shall be screened per the detail drawings. The outlet screen shall be secured to the end of the drain pipe using the appropriate ductile iron fittings specified in TP 04.03.H.5. The outlet screen shall be wire brushed, sprayed with rust neutralizer and then coated with epoxy paint to protect the screen against corrosion.

6. Rip rap shall be installed for erosion protection around the drain pipe outlet.

TP - 04.10 SETTING HYDRANTS:

A. General:

1. Install hydrants and auxiliary valves at the locations indicated on the plans.
2. The hydrant shall meet the requirements of TP 04.03.M. It shall be the Contractor's responsibility to order the correct bury depth hydrant or to inform the Owner or Owner's Representative of the necessity for risers when the need becomes apparent.
3. Hydrant installation shall be as shown on the detail drawing. All hydrants shall be tagged or covered until fully operational.

B. Auxiliary Gate Valve and Valve Box:

1. An auxiliary gate valve and valve box shall be located adjacent to the hydrant per the detail drawing.
2. The pipe length and material type between the fire hydrant and the auxiliary gate valve and between the auxiliary gate valve and the main shall be as designated on the details and plans.
3. Fully restraint joints between the tee and the auxiliary gate valve, and between the auxiliary gate valve and the hydrant.
4. Under no condition shall the pipe and valve diameter be less than 6-inch for fire hydrants.

C. Installing Hydrant:

1. Hydrants shall stand plumb and shall have the pumper nozzles oriented perpendicular to the street or in the direction approved by the Owner or Owner's Representative.
2. The hydrants shall be set so that the bury depth indicator on the hydrant barrel is at final grade.
3. Set hydrant with the breakaway traffic flange at an elevation of 2-inches above finished grade. The hydrant interior shall be free of all dirt or foreign matter before installation.
4. The Contractor shall use a hydrant operating wrench to turn the nozzle cap, pin and lug type hose couplings and hydrant operating nut. The Contractor shall replace any components they damage due to using improper tools.

D. Hydrant Base:

1. Set hydrant on compacted base.
2. A gravel seepage area (drain pit) shall be provided around the weep hole near the hydrant. Gravel shall be installed as per the detail drawing. Place gravel from 18-inches below to 6-inches above the weep hole opening.
3. A suitable concrete thrust block shall be constructed at the base of each hydrant in accordance with the plans and details. Once the hydrant is set, concrete shall be poured against undisturbed earth in such a manner that the weep hole is kept free from all concrete or mortar. If the weep hole is covered either partially or wholly, the hydrant shall be removed and cleaned and the gravel and concrete removed and replaced with new gravel and concrete.
4. Filter fabric shall be placed above the gravel drain pit as shown on the detail drawing.

TP - 04.11 POLYETHYLENE WRAPPING:

Where called for in the plans and specifications or directed by the Owner or Owner's Representative, pipe (ductile iron), valves, and fittings shall be encased in a polyethylene protective wrapping referred to hereafter as poly-wrap.

A. Materials: The poly-wrap shall be of virgin polyethylene, not less than 8 mils in thickness, formed into tubes or sheets as may be required. Naturally pigmented material may be used where exposure to ultra violet light will be less than 48 hours. Otherwise the material shall be pigmented with 2 to 2 1/2 percent of well dispersed carbon black with stabilizers.

The poly-wrap shall be secured as specified below with 2 inches wide pressure sensitive plastic tape not less than 10 mils thick. Tape shall be Scotchrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex, or approved equal. The minimum tube sizes for each pipe diameters are indicated in the table below:

Polywrap Flat Tube Widths		
Nominal Pipe Diameter (inches)	**Tube Widths with push-on joints (inches)**	**Tube Widths with mechanical joints (inches)**
4	14	16
6	17	20
8	21	24
10	25	27
12	29	30

B. Installation:

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections.
2. With the pipe suspended from the center, the tube shall be slipped over the spigot end and bunched up between the point of support and the spigot end.
3. After the pipe is installed into the bell of the adjacent pipe, the pipe shall be lowered to the trench bottom and the supporting sling removed from the center of the pipe.
4. The pipe shall then be raised at the bell end enough to allow the tube to be slipped along the full length of the barrel with enough left at each end to overlap the adjoining pipe about 1 foot.
5. A shallow bell hole must be made at each joint to facilitate installation of the polywrap.
6. Pull the bunched-up polywrap from the preceding length of pipe, slip it over the end of the new length of pipe, and secure in place with one circumferential turn of tape plus enough overlap to assure firm adhesion.
7. Slip the end of the polywrap from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Tape polywrap in place.
8. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe, and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
9. Repair any rips, punctures or other damage to the tube with the adhesive tape or pieces of tube material secured with tape.
10. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

TP - 04.12 PRESSURE TESTING:

Pressure testing shall be performed in accordance with these specifications. Use the Pressure Test Form at the end of this section. All water main pipe shall be pressure tested for leaks, including 2-inch pipe that is considered a water main. All pipelines shall be tested for water tightness up to the individual building service meter.

A. Concrete Thrust Blocking: Where any section of a water line is provided with concrete thrust blocking for fittings or hydrants, the pressure tests shall not be made until at least 48 hours after installation of the concrete thrust blocking, unless otherwise approved by the Owner or Owner's Representative.

B. Equipment and Scheduling:

1. Contractor shall provide all necessary equipment, including but not limited to, an appropriate pump, water container, water meter, pressure gauge, valve, and hydrant or corporation stop connection, and shall perform all work required in connection with the tests.
2. Contractor shall coordinate with the Owner and Owner's Representative so they may witness the entire duration of each pressure test.
3. Prior to requesting the Owner or Owner's Representative to witness the pressure test, the Contractor shall have all equipment set up completely ready for operation and shall have previously successfully performed the test to verify that the test section will pass.
4. The Contractor shall notify the Owner or Owner's Representative a minimum of two (2) working days in advance of the date that the Contractor plans to perform the pressure tests.
5. The test equipment shall be provided by the Contractor and is subject to inspection by the Owner or Owner's Representative.

C. Procedure: Arrangements for water used in pipeline testing and payment for the water shall be coordinated with the operating utility.

1. Test Preparation:

a) Pressure gauges used in testing shall be liquid filled and graduated at a maximum in 5 psi increments.

b) Two gauges will be used simultaneously for verification of the gauges' functionality with one gauge placed at the highest point and one at lowest point of the section being tested.

c) Prior to the test, the pipeline will be pressured to 10 psi above the test pressure, and then the pressure will be decreased to the test pressure so that gauge responsiveness can be observed.

d) Each section tested shall be slowly filled with water, with care being taken to expel all air from the mains and service lines, if installed.

e) If necessary, the pipes shall be tapped at high points to vent the air.

f) The test pressure shall be 150 psi (measured at the lowest point of elevation in the test section).

g) No section shall be tested that is greater than 2,500 feet in length or that has greater than 25 psi pressure change due to elevation.

h) In no case shall the test pressure be allowed to exceed the design pressure for pipe, appurtenances or thrust restraints.

i) The test shall be conducted in such a manner that existing lines and service user's plumbing is not damaged. Damage caused by testing shall be corrected at the expense of the Contractor.

j) All connections, blow offs, hydrants, house services up to the meter yoke, and valves shall be tested with the main as far as is practicable.

k) Air testing of water mains shall not be allowed.

l) Verify that all fire hydrant lead valves and main valves within the test section are open.

m) The test shall not begin until the pipe has been filled with water for at least 24 hours to allow for absorption.

2. Performing Test:

   a) The test section shall be slowly filled, at a velocity below 1 ft/s with potable water and all air shall be vented from the line. Install corporation stops at high points, if necessary, to facilitate air removal, and cap off after successful completion of the test.

   b) Pressurize the main to 150 psi as measured at the lowest elevation along the test section.

   c) The test shall have a minimum duration of two hours with the two hour period beginning when the test pressure is attained and the pump ceases operation.

   d) Any time the test pressure drops 5 psi, the pressure shall be restored to full test pressure and the quantity of water used shall be recorded.

   e) The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter with a sweep unit hand registering 1 gallon per revolution.

   f) At the conclusion of the test period, the Contractor shall pump the test section to full test pressure and record the total water used during the test.

3. Method of Water Measurement:

   a) Supply a means of accurate water measurement that is compatible with the pressurizing equipment (e.g. pump and hoses) such as water meter or water container with gradations. The measuring equipment must meet the approved submittal.

   b) The Contractor shall keep a record of all pressure tests.

   c) Minimum information recorded at the time of the test shall include the contract number, contractor name, date, time, stationing or other description of the test section, length and diameter of the test section, total allowable leakage, leakage detected, pass or fail indication and printed name of recorder.

   d) Copies of field pressure tests records shall be submitted to the Owner to show compliance with these requirements before payment is requested.

   e) Add total amount of water required to re-pressurize the line during and at the end of the test and compare with the allowable leakage as calculated in the Pressure Test Form.

   f) Allowable maximum leakage is 0.04 gallons per inch diameter per 24 hours per coupling.

   g) Visible leakage will not be allowed.

   h) All leaks shall be repaired and additional tests conducted until leakages are less than the allowable maximum. All repairs shall be made in a manner approved by the Owner and shall be at the expense of the Contractor.

   i) Disinfection and leak testing may be conducted concurrently.

TP - 04.13 FLUSHING & DISINFECTION OF MAINS:

A. Flushing before Disinfection:

1. Unless the Owner or Owner's Representative approves the Tablet Disinfection Method, the mains shall be flushed prior to disinfection.

2. Flush with potable water to provide 3 volumetric exchanges in the pipeline at a minimum velocity of 3 feet per second.

3. Pig line after flushing if sediment or debris is still visible in the discharge.

B. General:

1. The water mains, fittings and any existing facilities affected by the work shall be disinfected in accordance with AWWA C-651 (AWWA Standard for Disinfecting Water Mains) with water containing a minimum of 25 mg/l of chlorine.

2. This concentration may be obtained by installing temporary gas chlorination equipment, by introduction of a calcium hypochlorite (HTH) solution at several points, or by inserting soluble chlorine tablets in the pipeline as it is laid.

C. Disinfection Methods:

1. Tablet Method:

   a) This method is allowed only with Owner or Owner's Representative concurrence that storage, handling and installation of pipe were completed such that the pipe interior remained dry, clean and void of sediment and debris.

   b) Introduce tablets or granules to produce a free chlorine concentration of 25 mg/l during pipeline installation.

   c) If tablets are used, only those containing pure calcium hypochlorite will be allowed. Tablets containing any kind of stabilizer are prohibited.

   d) Since some stabilizers contain known or suspected carcinogens the Owner or Owner's Representative may require a certification of purity.

   e) Tablets shall be fastened to the top of the pipe with an NSF 61 approved adhesive such as Dow 732. The number of tablets required is given by Table 2, AWWA C-651.

2. Continuous Feed Method:

   a) Feed a chlorine solution into water entering the main such that the water will have a 25-mg/l free chlorine concentration.

   b) Continue feeding until the entire pipeline to be disinfected is filled with the chlorinated water.

   c) At the end of the 24-hours, there must be at least 10-mg/l free chlorine residual as evidenced by residual tests taken at approximately 1,200 foot intervals along the main.

3. Slug Method:

   a) Feed a chlorine solution into water entering the main such that the water will have a 100-mg/l free chlorine concentration.

   b) Apply the solution continuously and sufficiently to ensure that a column of water with 100 mg/l free chlorine residual is formed in the pipe.

   c) Ensure that all parts of the main and its appurtenances are exposed to the column for at least 3 hours.

   d) Check the residual of the column at 1,200 foot intervals along the main. If it drops below 50 mg/l, inject additional chlorine solution into the entire column such that its residual is raised to 100 mg/l.

   For the Continuous Feed & Slug Test Methods, ensure that the chlorine solution is introduced within 10-feet of the end of the section being disinfected and for all cases is being withdrawn or wasted from the most extreme point relative to the point of water introduction. If branches exist, ensure that the chlorinated solution reaches all portions of the branches.

D. Flushing after Disinfection:

1. After at least 24 hours contact time with the disinfection solution, the line shall be thoroughly flushed.
2. Flush chlorinated water in an environmentally safe manner. In no case shall direct disposal to surface water be permitted.
3. Check the chlorine residual at the time of disposal.
4. If disposal to a community sewer system is available, neutralize the chlorine residual if the free residual is above 10 mg/l.
5. If disposal is to the ground surface or ditch, neutralize chlorine residual if free residual is > 1 mg/l.
6. Flushing shall continue until all visible debris has been removed and the chlorine concentration is the same as in the existing system, or not more than 0.4 mg/l in a new or unchlorinated system.

E. Bacteriological Testing:

1. After disinfection and flushing, but before the water main is placed into service, the Contractor shall collect two bacteriological samples, 24 hours apart, at the service farthest from the water source for each system or independent extension.
2. The samples shall be forwarded to a State or EPA certified laboratory for water testing and analysis. The laboratory fees, shipping fees, etc. shall be paid for by the Contractor.
3. If the results are negative, the system may be put into service.
4. If either of the samples are positive, the system shall be disinfected again and a samples resubmitted for testing. This shall be repeated until negative results are obtained.
5. Contractor shall provide the Owner or Owner's Representative with documentation of results within 24 hours of laboratory results. Successful (negative) bacteriological test results and the required chlorine residual at the connection point to the existing system will be required prior to acceptance and beneficial use.

TP - 04.14 CLEANUP:

Upon completion of the work, the entire site shall be cleared of all debris, and the ground surface shall be finished to smooth and uniform slopes. Cleanup shall be considered an incidental item and no additional payment shall be made for it. All fences, clotheslines, gravel driveways or other obstructions removed during construction shall be left in a condition at least equal to their condition prior to construction.

TP - 04.15 RECORD DRAWINGS:

Record Drawings shall meet the requirements of TP 01 and the Supplementary Conditions of the contract.

TP - 04.16 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

All payments will be based on completed work performed in strict accordance with the plans and specifications, and the respective prices and payment shall constitute full compensation for all work completed, including incidentals. No separate payment will be made for thrust blocks, excavation, trenching, compaction and backfilling or other incidental items of work required under this section, and all such costs pertinent to these items shall be included in the applicable unit prices.

A. Water Pipe: Water pipe shall be measured in linear feet along the centerline of the pipe, including fittings, for each of the various sizes of water pipe installed. Payment for water pipe shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, bedding, stabilization

material, compaction, backfilling, pipe installation, fittings, thrust blocks, mechanical joint restraints, water main warning tape, water main tracer wire, tracer wire access box, hydrostatic pressure testing, disinfection, flushing, bacteriological testing, record drawings, final grading, seeding and final cleanup.

B. Gate Valves: Payment for water main gate valves shall be measured each for the various sizes of gate valves installed. Payment for valves shall be at the contract unit price shown in the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, related valves boxes, materials, and incidentals required for a complete installation, including excavation, gate valves, valve box, debris cap, concrete block, mechanical joint restraints, reinforced concrete pad, tracer wire access box, rip rap, marker posts, compaction, backfilling, record drawings, and final cleanup.

C. Fire Hydrants: Payment for hydrants shall be at the contract unit price shown in the Bid Schedule for each type of hydrant shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, tee or tapping sleeve connection to the main, mechanical joint restraints, auxiliary piping, gate valve and box, reinforced concrete pad, tracer wire access box, rip rap, hydrant, thrust block, seepage gravel, concrete blocks, filter fabric, compaction, backfilling, record drawings, and final cleanup.

D. Interconnections: Payment for interconnections shall be at the contract price shown in the Bid Schedule. Payment shall be full compensation for excavation, fittings, tapping sleeves, adapters, thrust blocks, mechanical restrained joints, markers, compaction, backfilling and any other supplies and materials.

E. Water and Sewer Main Crossings: All costs associated with completion of water and sewer main crossings shall be merged with other bid items and will not be considered a separate item for payment.

F. Combination Air Release and Vacuum Valve and Vault: Payment for combination air release and vacuum valves shall be measured each for various sizes of valves installed. Payment for combination air valves shall be at the contract unit price shown in the Bid Schedule. Payment shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, connection to water main, connection fittings, piping, combination air and vacuum valve, ball valve, sample tap, union, pipe support, screened gooseneck, seepage gravel, concrete vault, reinforced concrete collar, frame and cover, drain pipe and screen, drain pipe outlet erosion protection, bollards, compaction, backfilling, record drawings, and final cleanup.

G. Blow-off Hydrant Assembly: Payment for blow-off assembly shall be at the contract unit price shown in the Bid Schedule. Payment shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, tee or tapping sleeve connection to the main, mechanical joint restraints, auxiliary piping, gate valve and box, reinforced concrete collars, tracer wire, tracer wire access box, rip rap, seepage gravel, concrete blocks, thrust block, filter fabric, blow-off valve, RCP vault, CI frame and locking cover, penta head wrench and socket, portable discharge riser, fire hose, utility marker, compaction, backfilling, record drawings, and final cleanup.

H. Testing: No separate payment will be made for pressure testing, disinfection, flushing, and bacteriological testing. All costs associated with completion of all required testing shall be merged with other bid items and will not be considered a separate item for payment.

PRESSURE TEST FORM: METHOD AND RECORD

(Water Pressure Pipes)

Project: _____ Owner: _____

Location: _____ Date: _____

Project #: _____

Contractor: _____

Inspector: _____

Tester: _____

Test Section Area: _____

Test Section Location: From Station: _____ To Station: _____

(I) CALCULATE ALLOWABLE LEAKAGE (for 2 hour test at 150 psi for PVC):

$$L = \frac{N \times D}{300}$$

L = Allowable leakage: _____ gallons

D = Diameter of pipe: _____ inches

N = Number of joints in test section: _____

(II) CONDUCT AIR VOLUME TEST:

1. Pressurize line to 150 psi
2. Remove volume of water equal to amount of allowable leakage
3. Recheck pressure to assure a significant change (10 psi min.) from 150 psi.

(III) CONDUCT PRESSURE TEST:

1. Re-pressurize line to 150 psi
2. Add water as necessary to maintain pressure between 140 and 150 psi for test period (2 hours)
3. Upon completion of test period add water to increase the pressure back to 150 psi
4. Measure total volume of water added in steps 2 & 3. ***If the volume of water added exceeds allowable leakage, the test failed.***

Time	Air Volume Test			Pressure Test			Pass Y/N	Owner Witness Signature
	Initial Pressure (psi)	H_2O removed (gal)	Final Pressure (psi)	Initial Pressure (psi)	Final Pressure (psi)	Total H_2O Added (gal)		
	step 2.1	step 2.2	step 2.3	step 3.3	step 3.3	steps 3.2–3.4		

REMARKS:

_____

_____

_____

"I CERTIFY THE ABOVE REFERENCED SECTION OF WATER MAIN HAS BEEN PRESSURE TESTED AND PASSED IN ACCORDANCE WITH THE PROVISIONS OF THIS SPECIFICATION."

_____

Contractor's Representative Date

_____

Owner's Representative or Inspector Date

SUBMITTAL REVIEW FORM, SECTION 04

WATER TRANSMISSION AND DISTRIBUTION MAIN

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
04.03B1	PVC Pipe		
04.03B2	DI Pipe		
04.03C	DI Fittings (Bends, Tees)		
04.03D	Pipe Restraint		
04.03E	Gate Valve		
04.03F	Gate Valve Box & Lid		
04.03F2 04.03F3	Extension Stem & Debris Cap		
04.03G	Combination Air Release Valve Assembly		
04.03G2, G3, G4	ARV Vault, Cover, Fittings, Valves, Bracket & Piping		
04.03H	Blow-off Assembly		
04.03H2, H3, H4 & H5	Blow-off Vault, Cover, Portable Discharge Riser, Hose, Drain Pipe		
04.03I	Tapping Sleeve		

04.03L	Filter Fabric		
04.03M	Hydrant		
04.11	Poly-wrap		
04.10	Pressure Testing Method & Equip		
04.12	Pressure Test Results		
04.13.C	Disinfection Method		
04.13.E	Water Testing Lab & Bacteriological Results		
04.06	Method of Connection to Existing Water Main		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 05 – WATER SERVICE LINES

TP-05.01 SCOPE:

Furnish all labor, materials, equipment, and incidentals as required, and perform all operations in connection with the complete installation of water service lines, in strict accordance with the applicable plans, details and these Technical Provisions. All permits, permissions, or other authorizations required by the tribal or municipal utility authority for tapping and connection are the responsibility and to the cost of the Contractor.

TP-05.02 GENERAL:

New service line locations are identified on the plans. Water service lines shall be installed as shown on the detail drawing and connected to the existing building water service line stub-out within five (5) feet of the building. Contractor shall verify the location, size, and type of service line stub-out. Service line staking and staking for new water main tap and meter box shall be performed by the Contractor and approved by the Owner or Owner's Representative. Locating existing lines and valves shall be the responsibility of the Contractor in coordination with a representative from the operating utility. Existing water service lines will be properly abandoned in place and all facilities located at ground surface shall be removed and disposed of at the Contractor's expense. Trench excavation and backfilling operations shall be performed as specified in Technical Provision 01 (TP-01).

Contractor shall contact each resident or business to verify the time that water service will be disconnected during service line tie-in. Connection to existing service or utilities, or other work that requires the temporary shutdown of any existing services shall be planned and coordinated with the operating utility.

Pipe joints and fitting installation shall be in accordance with the manufacturer's recommendations. The work will not be accepted until satisfactory backfilling, compaction and cleanup is complete. If the work does not meet the specified requirements of this section, the Contractor shall remove and replace at the Contractor's expense. The Contractor shall leave each premise in a neat and orderly condition, restoring it as near as possible to its original condition and to the approval of the Owner or Owners' Representative.

TP-05.03 WATER SERVICE LINE MATERIALS:

Materials shall be inspected to verify that they meet these specifications and match the approved submittals. Materials not meeting these requirements shall not be permitted to be installed. Install all materials and equipment in strict accordance with the manufacturer's recommendations, applicable codes and regulations, and these specifications.

The unloading, handling, and storage of the pipe and materials shall be conducted in a safe manner. Inspect all materials prior to installation to ensure that they are in new condition. Inspect pipe and fittings for defects. Plastic pipes with scratches, gouges, grooves or discoloration shall be rejected. Remove all materials from site that are defective, damaged, used, unsound, or that otherwise do not meet the specifications.

Each length of pipe used shall be clearly marked with the following: Manufacturer, Nominal Pipe Size, PE or PVC Classification, ASTM Designation and Pipe Class.

A. Polyethylene (PE) Pipe: All polyethylene (PE) pipe and fittings furnished under this specification shall be NSF 61 and AWWA approved for potable water service line, shall conform to ASTM D2239, shall conform to all applicable provisions and requirements of the latest revision of AWWA C901. PE pipe must be 200 psi minimum pressure rated, PE4710 or equal, and shall have a Plastic Pipe Institute (PPI) recommended long term Hydrostatic Design Stress (HDS) of at least 1,000 psi at a temperature of 73ºF (23ºC). Specific pipe sizing and dimension ratio (DR) are provided in the drawings and/or Bid Schedule.

B. PE Pipe Fittings: Brass fittings for the PE pipe shall be designed to prevent collapsing and pullout. Fittings shall use a compression ring, or pack joint, with stainless steel stiffeners, to make a watertight

connection. Fittings shall not contain lead and shall be Mueller Insta-tite, Ford (Ultra-tite, Pack Joint, or Grip Joint), or equal as approved by the Owner or Owner's Representative. All brass fittings shall have the letter "NL" cast into the main body signifying NO LEAD for proper identification.

C. PVC Pipe and Fittings (2-inch): PVC pipe shall be SDR 21 (200 psi). PVC pipe shall meet the requirements of NSF 14. Each joint of pipe shall carry the NSF seal of approval for pipes for potable water. Pipe shall conform to ASTM D-2241 and ASTM D-1784. Rubber coupling rings shall conform to ASTM D-1869.

D. Service Saddles: Water service saddles or clamps, shall be of stainless steel, bronze, or brass construction and of a design that will prevent collapsing of the PVC main line. Service saddles or clamps shall comply with the latest versions of AWWA C605 and C800. Saddles shall be Mueller BR 2 S (for all types of water mains) or BR 2 B (not allowed for PVC mains) Series double strap type, Mueller SS Series stainless steel service saddles (for all types of water mains), Ford FS202 Series double strap type (for all types of water mains), Ford FS303 Series stainless steel service saddles (for all types of water mains), or approved equal, for the size of pipe tapped. Threads shall be IPT.

E. Corporation Stops: Corporation stops shall be brass with IPT inlet and an Insta-tite, Grip Joint, Ultra-tite, or Pack Joint outlet. Corporation stops shall be lead free and be equal to Mueller H-15028 or Ford FB1000-4 per the latest version of AWWA C800.

F. Curb Stops and Boxes: Curb stops shall be brass, Mueller Mark II Oriseal or Ford ball valve curb stop or approved equal. Curb stops shall have IPS to PE Insta-tite (Mueller), Ultra-tite (Ford), Pack Joint (Ford), or Grip Joint (Ford) end connections, a solid tee head roadway, and quarter turn stops. Curb stop valves must comply with the latest version of AWWA C800. Boxes shall be 1-1/4-inch diameter Arch Pattern in cast iron, Mueller, Ford, or approved equal. They shall have a 48-inch minimum box extension length with a 40-inch stationary rod and a one piece locking top.

G. Water Meter and Box Combination:

1. Coppersetter: Ford 70 Series, or equal, lead-free coppersetter with cartridge style dual check valve and angle ball valve stop; 5/8-inch by 3/4-inch or approved equal shall be utilized. Adequate brace bars to support the meter in a horizontal position in a rigid manner shall be provided. Where an Individual PRV is required, a horizontal tandem style lead-free coppersetter with cartridge style dual check valve and angle ball valve stop; 5/8-inch by 3/4-inch or approved equal shall be installed.

2. Individual Pressure Reducing Valve (PRV): If required, or as shown on the plans, PRVs shall be lead-free and NSF-certified. Individual PRVs shall be Zurn-Wilkins Model NR3XL or approved equal. The PRV shall only be installed if indicated on the plans.

3. Water Meter: The water meter shall be a sealed register magnetic drive water meter with nutating disc, positive displacement, magnetic, or ultrasonic lead-free meter. The meter shall be Badgermeter Model 25, Sensus iPerl, Neptune T10 series, Kamstrup Ultrasonic water meter, or equal as indicated on the project plans and as approved by Owner and noted on the Bid Schedule.

4. Meter Box and Cover: Boxes in traffic areas shall be wire reinforced concrete with steel diamond plate or cast iron covers with interlocked sections. Boxes and covers in non-traffic areas shall be wire reinforced concrete. All sections of all boxes shall be nested or otherwise interlocked to prevent lateral movement. Sufficient sections shall be installed to provide a walled enclosure for a minimum depth of 6 inches below the angle valve. Minimum cover opening dimensions shall be 9-inches by 14-inches. Pea gravel or 3/4 inch crushed rock shall be placed inside the meter can below the water meter to a minimum depth of three (3) inches as shown on the drawings. The meter box shall be installed on bricks or masonry block on top of the prepared subsurface.

H. Tracer Wire, Tracer Wire Access Point, and Warning Tape: Shall be installed per the requirements of TP-01.

I. Pipe Hangers: Shall be made of material compatible with piping material. Shall be of sufficient strength to support pipe at full capacity. Shall not affect pipe integrity by abrading, cutting or bending of pipe.

J. Pipe Insulation: Pipe insulation shall be closed cell, pre-slit foam insulation properly sized for pipe and fittings.

TP-05.04 SERVICE SADDLE AND CORPORATION STOP INSTALLATION:

A water service saddle shall be installed at the water main with a corporation stop, without disruption of the main service. Each water service line connection to an existing water main shall be live tapped through the corporation stop with an approved tapping machine, unless otherwise approved by the Owner or Owner's Representative in writing. Dry taps are only permitted during new water main installation, prior to disinfection. Contractor shall take the necessary precautions to prevent damage to the water main during the tapping process.

TP-05.05 WATER SERVICE LINE INSTALLATION:

All water service line components shall be disinfected, by spraying or swabbing with a chlorine solution containing a minimum of 50 mg/L of chlorine. The components shall be disinfected just prior to installation.

A. Water Service Lines

1. Water service lines shall be installed per ASTM D2774 (PE) or AWWA C605-05 (PVC).
2. PE pipe shall be installed with sufficient slack for thermal expansion and contraction.
3. All water service lines shall have a minimum cover of 36 inches, or as directed by the Owner or Owner's Representative.
4. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth, or foreign substances will enter the pipes or fittings.
5. Splices are not allowed on the water service line without approval from the Owner or Owner's Representative.
6. Compression couplings shall be used for all connections.
7. For connections beneath the home, install pipe hangers at a maximum spacing of 2-feet apart for all horizontal PE pipe beneath the home. Install pipe insulation at locations shown on the plans.
8. If no connection is made to the building stub out, cap the new water service line within 5-feet of the proposed building with a water tight plug. A piece of No. 3 rebar, 1-foot in length shall be installed to mark the service line terminus. Bury the rebar 6-inches below ground surface. Embed a 2x4 post (or stake) near the service line terminus extending a minimum of 6-inches above the ground.
9. Install Tracer Wire and Warning Tape along the water service lines from the water main to the meter box and to the building, or as shown on the drawings. Tracer wire shall be installed and tested in accordance with TP 01.

B. Curb Stop and Box

1. Curb stops shall be supplied and installed at the locations shown on the plans. The curb stop shall be installed according to the manufacturer's recommendations.
2. Set curb stop on a solid concrete block 2-inches thick by 8-inches wide by 16-inches long. Concrete block shall be set on undisturbed earth. Install stationary rod on the curb stop.
3. Set the top of the curb box flush with finished grade elevation.
4. Support curb box during backfilling operation to prevent movement and maintain a vertical (plumb) position.

C. Water Meter and Box

1. The water meter and box shall be installed as shown on the detail drawing.
2. The meter box shall be installed on top of a gravel base and bricks or masonry blocks as indicated in the detail drawing.
3. The meter box shall be set 1/2 inch above the finished grade of the site or adjacent pavement surface.
4. The meter box shall be supported during backfill to ensure final setting of the meter box is plumb.

TP-05.06 RECORD DRAWINGS:

The requirements of Technical Provision 01 must be met. Failure to properly identify these items will result in the Contractor having to uncover pipe at Contractor's expense to verify their location. The record drawings shall become the property of the Owner after contract completion. Properly reference, record and stake water main tap locations to allow for ready relocation.

TP-05.07 PRESSURE TESTING AND FLUSHING:

Water service lines, joints and meter installation shall be tested by applying mainline pressure to the service line before backfilling and observing leaks in the presence of the Owner's Representative. No visible leakage will be allowed. If a new water main is pressure tested, the water service lines can be tested at the same time and pressure as the water main. Provision shall be made to prevent pressurizing of interior home plumbing during the test. Repair all visible leaks and retest the line until successfully completed, at the Contractor's expense.

After installation, the water service line, meter, and valves shall be thoroughly flushed for a minimum of 15 minutes. Flushing shall be completed prior to connecting to the house or existing service line. If a restricted flow, or leak, is observed, the Contractor shall correct the identified problem prior to backfilling. Contractor shall test the chlorine residual of the flushed water and provide the reading to the Owner's Representative so it can be compared to the minimum required by the operating utility and EPA.

TP-05.08 WATER SERVICE AND SEWER CROSSINGS:

Where water and sewer lines cross, the requirements of TP-01 must be met.

TP-05.09 MEASUREMENT AND PAYMENT:

A. Water Service Lines: Water service lines shall be measured in linear feet along the centerline of the pipe. Payment for the water service lines shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, bedding, stabilization material, pipe installation, backfilling, compaction, seeding, disinfection, hydrostatic testing, flushing, and final cleanup.

B. Service Line Connection: Cost for the water service line connection shall include the water main tap, water service saddle, and corporation stop. Each water service line connection shall be measured such that a water main tap and connection to the corresponding building stub-out or plugged line as required shall be counted as a total of one each. Payment for these connections shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, water main tap, saddle, corporation stop, building stub-out connection or line termination and plugging, applicable tapping fees, backfilling, compaction, and final cleanup.

C. Curb Stop: Curb stop shall be measured as each. Payment for the curb stop shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, curb stop, curb box and stationary rod, fittings, backfilling, compaction, and final cleanup.

D. Water Meter and Box Combination: Water meter and box shall be measured as each. Payment for the water meter and box shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, copper-setter, water meter, water meter box with lid, fittings, gravel, backfilling, compaction, and final cleanup.

E. Water Meter, PRV, and Box Combination: Water meter, pressure reducing valve (PRV) and box shall be measured as each. Payment for the water meter, PRV, and box shall be at the contract unit price shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, copper-setter, water meter, PRV, meter box , fittings, backfilling, compaction, and final cleanup.

SUBMITTAL REVIEW FORM
SECTION 05 – WATER SERVICE LINES

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No. Manufacturer, etc.)	Action by Owner
05.03.A	PE Pipe		
05.03.B	PE Pipe Fittings		
05.03.C	PVC Pipe & Fittings		
05.03.D	Service Saddles		
05.03.E	Corporation Stops		
05.03.F	Curb Stops & Boxes		
05.03.G.1	Coppersetter		
05.03.G.2	Pressure Reducing Valve		
05.03.G.3	Water Meter		
05.03.G.4	Meter Box and Cover		
5.03.I & J	Pipe Hangers and Pipe Insulation		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 11 - ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS

TP - 11.01 SCOPE OF WORK:

Specifications included herein are intended to support requirements of Section 01 of these Technical Provisions where road, railroad, and special utility crossings are necessary for the installation of sanitation facilities under this contract.

Construction shall comply in all respects to the requirements of any permit incorporated into this contract. Copies of applicable permits obtained by the Owner shall be included in the Appendix to these Technical Provisions. The Contractor shall meet all requirements and conditions of these permits with respect to materials, equipment, notification and timing. At least two days notice shall be given to the Owner or Owner's Representative and permit grantor before work is done on any crossing. Any permits not previously obtained by the Owner shall be the responsibility of the Contractor.

Requirements of the permit or permits shall control if contradictions exist between Technical Provisions and such permits. All work within the right-of-way of roads shall be performed in accordance with the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-14 – Division 600". At least two (2) weeks prior to performing the crossing, the Contractor shall submit a signed and dated traffic control plan showing how they intend to safely control traffic in the area of the crossing for review and approval by the Owner and the respective road authority. For road crossings, the Contractor shall have at least one lane open to traffic at all times unless otherwise required by traffic control plan.

The work to be completed under these Technical Provisions includes the furnishing of all labor, materials, transportation, tools, supplies and appurtenances necessary to complete the crossings in accordance with the indicated requirements.

TP - 11.02 ROADWAY CROSSINGS:

Where so indicated on the plans, main pipeline crossings of highways, railroads, canals, and other structures shall be made by installation of a steel pipe casing under the structure as shown on the plans. The casing pipe shall be installed where indicated on the plans and at the locations designated by the Owner. Casing pipe 8-inches in diameter and larger shall be Grade A steel pipe with a minimum wall thickness of 0.375 inches and shall meet ASTM A-53 or ASTM A-120 (Welded and Seamless Steel Pipe). Steel pipe shall conform to: ASTM A53 Grade B, Type E or S; ASTM A 139 Grade B; ASTM A 106 Grade B or C; API 5L Grade B or Grades X42 to X56.

The casing pipe for water service lines and sewer service lines shall be standard weight galvanized steel pipe conforming to ASTM A-120 (Welded and Seamless Steel Pipe). Crossings for water service lines and water mains shall be a minimum of four (4) feet below the surface of the roadway and two (2) feet below other structures and canal inverts unless otherwise shown on the plans.

The method of installing the carrier pipe within the steel casing shall be approved by the Owner. Pipe within casings shall be installed in the encasement pipe as shown on the plans providing suitable spacers that will prevent disturbance of the assembled joints. Redwood and cedar wood casing spacers will not be allowed. The casing spacers shall be installed per manufacturer's specifications. Casing spacers shall be boltless and non-metallic as manufactured by GPT, Calpico or approved equal. After the carrier pipe is installed in the casing and tested, both ends of the encasement shall be sealed to prevent the entrance of foreign objects into the casing. Casing end seals shall be manufactured by GPT, Calpico or approved equal. All water and sewer lines installed within the casing pipe shall be installed with mechanical restrained joints on every pipe joint within the casing pipe.

A. Open Cut Crossings:

1. Unpaved Roads: Excavation and backfilling of unpaved roads shall be done in accordance to Technical Provision Section 01.

2. Paved Roads: Excavation and backfilling of paved roads shall be done in accordance to Technical Provision Section 01. The lean concrete backfill shall meet the requirements of the Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14, Section 614-Lean Concrete Backfill

B. Bored Road Crossing: Where only bored road crossing shall be permitted as indicated on the plans, the Contractor shall furnish all equipment, material, and labor required to complete the installation. Boring methods which involve jetting or washing techniques are not allowed. Alternate methods of road boring must be approved in writing by the applicable permit granting authority or right-of-way authority and the Owner or Owner's Representative. The use of water under pressure jetting or puddling shall not be permitted to facilitate boring, pushing, or jacking operations.

Maintain alignment of the borehole such that all grades and alignment of the pipeline are as shown in the plans. Failure to maintain such grades and alignment will result in rejection of the crossing for payment. Such operations shall be scheduled so that it may be completed from start to finish without delay and in accordance with appropriate permits and the standards.

When the casing pipe is to be installed by boring, the casing shall be kept on line and grade by suitable guide rails in the approach pit. The deviation from line and grade of the casing pipe shall provide installation of the carrier pipe within the following allowances:

Lines	Horizontal Deviation	Vertical Deviation
Water Line	1.0 ft per 100 feet (1.0%)	1.0 ft per 100 ft (1.0%)
Sewer Line	1.0 ft per 100 feet (l.0%)	0.1 ft per 50 ft (0.2%)

Deviations will be determined from the line and grade approved by the Owner. The casing pipe for all crossings shall be installed in a manner that will allow for the installation of the carrier pipe in a straight line without contacting the walls of the casing. Casings for the carrier pipe shall be installed prior to the installation of pipe within 100 feet of the crossing for the main or service line under construction.

If excessive voids or too large a bored hole is produced during casing or pipeline installations, or if it is necessary to abandon a bored or tunneled hole, prompt remedial action shall be taken by the Contractor. All voids or abandoned holes caused by boring or jacking are to be filled by pressure grouting. The grout material shall be as specified by the permit granting authority or right-of-way authority and approved by the Owner or Owner's Representative. The hole diameter shall not exceed the outside diameter of the casing pipe (including coating) by more than two (2) inches on casings with an inside diameter greater than twelve (12) inches.

TP - 11.03 ROADWAY RESTORATION:

Road restoration shall be done in accordance with Section 01 of these Technical Provisions.

TP - 11.04 BARRICADES, GUARDS AND SAFETY PROVISIONS:

The Contractor shall be responsible for erecting and maintaining adequate barricades, construction signs, torches, red lanterns, flagmen, and guards, as required, during the progress of the construction work and until it is safe to resume use of the roadway. Rules and regulations of the permit granting authority or right-of-way authority regarding safety provisions shall be observed. All work within the right-of-way of roads shall be performed in accordance with the latest edition of the Manual on Uniformed Traffic Control Devices (MUTCD). Work within right-of-ways and traffic control plans shall comply with all applicable provisions of Section 01 of the Technical Provisions in addition to those indicated under provisions of this Section.

TP - 11.05 RAILROAD AND SPECIAL UTILITY CROSSINGS:

Railroads and other specialized utility crossings shall comply with all requirements of the permits indicated. Pipeline alignment and grades shall be maintained as shown on the plans. The Contractor shall be responsible for compliance with all requirements of special crossing permits applicable to this project. Copies of such permits shall be included in the Appendix of these specifications. If no special crossing permits are appended, and such crossings are indicated on the plans, crossings will comply with all applicable provisions of Section 01 of these Technical Provisions in addition to those indicated under other provisions of this Section. At least two (2) days of notice shall be given to the Owner or Owner's Representative and right-of-way authority or permit granting authority before work is done on any crossing.

TP - 11.06 CLEANUP:

Upon completion of the work, the entire site shall be cleared of all debris, and the ground surface shall be finished to smooth and uniform slopes. Cleanup shall be considered an incidental item and no additional payment shall be made for it. All of the right-of-way area and structures shall be left in a condition at least equal to their condition prior to construction.

TP - 11.07 MEASUREMENT AND PAYMENT:

Payment for bored roadway, open cut roadway, railroad or special utility crossings shall be measured in linear feet along the centerline of the casing. Payment shall be full compensation for all materials, equipment, labor, and incidentals for a complete installation including, but not limited to, boring, asphalt cutting, excavation, encasement and carrier pipe, carrier pipe connection fittings and joint restraints, blocking/casing spacers, backfilling, paved and gravel roadway restoration, barricades, guards and safety provisions, traffic control plan, cleanup, and record drawings. Such payment shall also be full compensation for all required certificates of insurance, development of approved traffic control plans and implementation of traffic control.

SUBMITTAL REVIEW FORM

SECTION 11 – ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
11.01	Permits		
11.02	Boring Method		
11.02	Casing		
11.02	Casing Spacers		
11.02	Casing Seal		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 28 - HIGH DENSITY POLYETHYLENE (HDPE) MAIN & FITTINGS

TP - 28.01 SCOPE:

The work covered by this section consists of furnishing all labor, equipment, materials and incidentals, in connection with the construction of high density polyethylene (HDPE) pipe and fittings for water and wastewater applications, in accordance with these drawings and specifications. HDPE pipe and fittings shall conform to all applicable standards and procedures as referenced in this specification and meet all applicable testing and material properties as described by the applicable standards referenced in this specification.

TP - 28.02 GENERAL:

HDPE pipes and fittings shall be acceptable for use with water and wastewater and shall be supplied by a single manufacturer. Any material used for potable water shall be listed and approved for potable water in accordance with NSF/ANSI 61. Approximately every 5 feet, the pipe shall be marked showing the NSF-61 seal of approval, the manufacturer's name, pipe diameter, DR rating, material type/classification, pressure class, and production date.

The pipe shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications. Pipe shall be manufactured by Performance Pipe, WL Plastics, JM Eagle, or equal as approved by the Owner or Owner's Representative.

Work covered by this section will not be accepted until the backfilling and testing connected with the work has been completed satisfactorily. Any section of HDPE that is found defective in material, alignment, or joints before acceptance shall be corrected to the satisfaction of the Owner or Owner's Representative.

TP - 28.03 MATERIALS:

A. Pipe and Fitting Material:

1. Materials used for the manufacture of polyethylene pipe, tube and fittings shall be PE 4710 high density polyethylene.
2. HDPE pipe sizes 4-inch diameter and larger shall be ductile iron pipe size (DIPS) complying with ANSI/AWWA C906.

B. HDPE Pipe Fittings:

1. Fittings shall have pressure class ratings not less than the pressure class rating of the pipe to which they are joined and shall be manufactured from PE 4710 material in accordance with this specification.
2. All fittings shall meet the requirements of AWWA C906. All fittings shall be molded or fabricated by the manufacturer. No Contractor fabricated fittings shall be used.
    a) Molded butt fusion fittings, including flange adapters and mechanical (MJ) adapters, shall comply with ASTM D3261.
        i. The polyethylene flange adapters at pipe material transitions shall be backed up by stainless steel flanges conforming to ANSI B16.1 and shaped as necessary to suit the outside dimensions of the pipe. The flange adapter assemblies shall be connected with corrosion resistant bolts and nuts of Type 316 Stainless Steel as specified in ASTM A726 and ASTM A307. All bolts shall be tightened to the manufacturer's specified torques. Bolts shall be tightened alternatively and evenly. After installation apply a bitumastic coating to bolts and nuts.

ii. MJ adapters shall be provided with stainless steel stiffeners.

b) Fittings shall be manufactured by Georg Fischer Central Plastics or equal as approved by the Owner or Owner's Representative

C. Warning Tape and Tracer Wire: Warning tape and tracer wire shall be installed in accordance with Section 01 of these Technical Provisions.

D. Markers and Bollards: Marker and bollards shall be installed in accordance with Section 01 of these Technical Provisions.

TP - 28.04 JOINING METHOD:

A. Heat Fusion: Joints shall be butt-fused per ASTM D2657 and the manufacturer's recommendations except as where indicated otherwise on the plans. Ensure that adjoining HDPE pipes are of the same grade and dimensions. Do not remove the butt-fused joint bead, unless approved by the Owner.

1. Fusible HDPE pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.

2. Fusible HDPE pipe will be fused by qualified fusion technicians, as documented per PPI TN-42 and ASTM F3190. Certifications shall be provided for all qualified fusion technicians that will be fusing the HDPE pipe.

3. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following elements:

a) Heat Plate: Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly; cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's guidelines.

b) Carriage: Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.

c) General Machine: Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.

d) Data Logging Device: An approved data logging device with the current version of the pipe supplier's recommended and compatible software shall be used. Data logging device operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.

e) Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of fusible HDPE pipe. The software shall register and/or record the parameters required by the pipe supplier and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

f) Other equipment specifically required for the fusion process shall include the following:

i. Pipe rollers shall be used for support of pipe to either side of the machine.

ii. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement, extreme temperatures, and /or windy weather, per the pipe supplier's recommendations. The fusing working area under

the canopy shall be kept clean and free from dust, water and high wind conditions.

iii. An infrared (IR) pyrometer for checking pipe and heat plate temperatures.

iv. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.

v. Facing blades specifically designed for cutting fusible HDPE pipe shall be used.

B. Electrofusion: Heat fusion is the preferred method for welding HDPE pipe, but certain projects may benefit from the use of electrofusion. For this reason, it shall be considered an acceptable joining method on a site-by-site basis. The use of electrofusion must be approved by the Owner or Owner's Representative.

C. Mechanical Connections:

1. Mechanical Compression Fitting for Small Diameter Pipes:

a) All service brass shall comply with AWWA C-800. Any components in contact with potable water will also comply with the latest requirements of the Federal Safe Drinking Water Act. Brass or bonze body fitting shall be designed to prevent collapsing and pullout using a threaded compression nut, an elastomer compression ring or pack joint, a stiffener, and/or a grip ring.

b) Fittings shall not contain lead and shall be Mueller Insta-tite, Ford (Pack Joint, Quick Joint, or Grip Joint) or equal as approved by the Owner or Owner's Representative.

2. HDPE Connection to PVC and Ductile Iron Pipe:

a) Flange and Mechanical Joint (MJ) Adapter:

i. Acceptable mechanical fittings for use with HDPE pipe and fittings shall be mechanical fittings that are qualified by the mechanical fitting manufacturer for use with HDPE pipe and fittings.

ii. Adapter assemblies shall be connected with corrosion resisting bolts and nuts of Type 316 Stainless Steel as specified in ASTM A726 and ASTM A307. All bolts shall be tightened to the manufacturer's specified torques. Bolts shall be tightened alternatively and evenly. After installation apply a bitumastic coating to bolts and nuts.

iii. Mechanical fittings for use with HDPE pipe shall provide restraint against longitudinal separation that is inherent to the design of the joint. Mechanical joints that do not provide restraint against pull-out or push-off are prohibited.

iv. Mechanical connections to non-HDPE devices and appurtenances shall be by bolted flange adapter or MJ adapter. Flange adapter and MJ adapter connections shall be assembled, installed and tightened in accordance with flange adapter or MJ adapter manufacturer's instructions. Flange bolt tightening shall be in accordance with PPI TN-38 and backed up by stainless steel flanges conforming to ANSI B16.1 shaped as necessary to suit the outside dimensions of the pipe.

v. HDPE to PVC and ductile iron pipe shall use MJ ductile iron sleeve equal to Tyler Union C153 sleeve or approved equal. Anchoring retaining glands shall be approved equal of EBAA Iron Megalug. Stiffeners shall be Cascade HDPE stainless steel stiffener or equal as approved by the Owner or Owner's Representative.

TP - 28.05 INSTALLATION:

A. Lengths of pipe shall be assembled by the butt-fusion process. All pipe so joined shall be made from the same class and type of raw material made by the same raw material supplier. Pipe shall be furnished in standard laying lengths not to exceed 50 feet and no shorter than 20 feet.

B. HDPE pipe shall be installed in accordance with the instruction of the manufacturer, as shown on the drawings and as specified herein. A factory qualified joining technician as designated by the pipe manufacturer shall perform all heat fusion joints.

C. HDPE shall be installed either by Open Trench Construction or Directional Bore Method as outlined in these Technical Provisions.

1. Open Trench Installation: Trenching and backfilling operations shall be performed as specified in Section 01 of these Technical Provisions.

2. Directional Bore Installation: Directional boring shall be performed as specified in Section 56 of these Technical Provisions.

D. Care shall be taken in loading, transporting, and unloading to prevent damage to the pipe. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before installation, and no piece shall be installed which is found to be defective. Any damage to the pipe shall be repaired as directed by the Owner or Owner's Representative. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner by the Contractor, at his own expense.

E. Under no circumstances shall the pipe or accessories be dropped into the trench or forced through a directional bore upon "pull-back".

F. Care shall be taken during transportation of the pipe such that it will not be cut, kinked or otherwise damaged.

G. Ropes, fabric or rubber protected slings and straps shall be used when handling pipes. Chains, cables or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe.

H. Pipes shall be stored on level ground, preferably turf or sand, free of sharp objects, which could damage the pipe. Stacking of the polyethylene pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.

I. Pipe shall be stored on clean level ground to prevent undue scratching or gouging. The handling of the pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. The maximum allowable depth of cuts, scratches or gouges on the exterior of the pipe is 5 percent of the wall thickness. The interior pipe surface shall be free of cuts, gouges or scratches.

J. Pipe shall be laid to lines and grade shown on the drawings with bedding and backfill as shown on the details.

K. When laying pipe is not in progress, including lunchtime, the open ends of the pipe shall be closed by fabricated plugs, or by other approved means.

L. Sections of pipe with cuts, scratches or gouges exceeding 5 percent of the pipe wall thickness shall be removed completely and the ends of the pipeline rejoined.

M. The pipe shall be joined by the method of thermal butt fusion. All joints shall be made in strict compliance with the manufacturer's recommendations.

N. Mechanical connections of the polyethylene pipe to auxiliary equipment such as valves, pumps and tanks

shall be through flanged connections which shall consists of the following:

1. A polyethylene flange or MJ shall be thermally butt-fused to the stub end of the pipe.
2. A 316 stainless steel back up ring shall mate with a 316 stainless steel flange.
3. 316 stainless steel bolts and nuts shall be used.

O. Flange connections shall be provided with a full-face neoprene gasket.

P. All HDPE pipe must be at the temperature of the surrounding soil at the time of backfilling and compaction.

Q. If defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. All pipe and fittings shall be thoroughly cleaned before installation, shall be kept clean until they are used in the work and when laid, shall conform to the lines and grades required.

TP - 28.06 PIPE CLEANING:

At the conclusion of the work, thoroughly clean all of the new pipe lines to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period by forcing a cleaning swab through all mains 6-inch or greater. Flushing velocities shall be a minimum of 2.5 feet per second. All flushing shall be coordinated with the Owner or Owner's Representative. Debris cleaned from the lines shall be removed from the job site.

TP - 28.07 TESTING:

A. Hydrostatic pressure leak tests of PE pressure piping systems should be conducted in accordance with ASTM F 2164.

B. All HDPE water mains shall be disinfected after or during pressure testing in accordance with Section 04 of these Technical Provisions.

C. All HDPE mains shall be pressure tested. Contractor shall supply all labor, equipment, material, gages, pumps, meters and incidentals required for testing. Each main shall be pressure tested upon completion of the pipe laying and backfilling operations, including placement of any required temporary roadway surfacing.

D. All mains shall be tested at the lowest elevation in the test section at 150 percent of the system design pressure of the pipe unless otherwise approved by the Owner or Owner's Representative.

E. Maximum length of pipe allowed during each pressure test shall be approved by the Owner or Owner's Representative.

F. The pipeline test section must be restrained against movement in the event of catastrophic failure. Joints at the main connection points or other locations may be requested to be exposed by the Owner or Owner's Representative for leakage examination, provided that restraint is maintained.

G. The testing equipment capacity and the pipeline test section should be such that the test section can be pressurized and examined for leaks within test duration time limits. Lower capacity testing and pressurizing equipment may require a shorter test section.

H. Test equipment and the pipeline test section should be examined before pressure is applied to ensure that connections are tight, necessary restraints are in place and secure, and components that should be isolated or disconnected are isolated or disconnected. All low pressure filling lines and other items not subject to the test pressure should be disconnected or isolated.

I. For pressure piping systems where test pressure limiting components or devices have been isolated, or

removed, or are not present in the test section, the maximum allowable test pressure for a leak test duration of 8 hours or less is 1.5 times the system design pressure at the lowest elevation in the section under test. If lower pressure rated components cannot be removed or isolated from the test section, the maximum test pressure is the pressure rating of the lowest pressure rated component that cannot be isolated from the test section. Test pressure is temperature dependent. At ambient or water temperatures > 80 degrees F, use manufacturer's recommendation for test pressure.

J. Pressure testing procedure shall be per manufacturer's recommendations or as follows:

1. Fill line slowly with water. Maintain flow velocity less than 2 feet per second. The test section should be completely filled with the test liquid, taking care to bleed off any trapped air.
2. Expel air completely from the line during filling and again before applying test pressure. Air shall be expelled by means of taps at points of highest elevation.
3. The test procedure consists of initial expansion and test phases. For the initial expansion phase, the test section is pressurized to 10% above the test pressure and allowed to stand without makeup pressure for two to three hours, to allow for diametric expansion or pipe stretching to stabilize.
4. For the test phase, make-up test liquid is added as required to reach and maintain 10% below the test pressure for four (4) hours. This is the target test pressure. If the pressure remains steady (within 5% of the target test pressure) for an hour, leakage is not indicated.
    a) If leaks are discovered, depressurize the test section before repairing leaks. Correctly made fusion joints do not leak. Leakage at a butt fusion joint may indicate imminent catastrophic rupture. Depressurize the test section immediately if butt fusion leakage is discovered. Leaks at fusion joints require the fusion joint to be cut out and redone.
    b) If the pressure leak test is not completed due to leakage, equipment failure, etc., the test section should be de-pressurized and repairs made. Allow the test section to remain depressurized for at least eight (8) hours before retesting.
5. Upon completion of the test, the pressure shall be bled off from a location other than the point where the pressure is monitored. The pressure drop shall be witnessed by the Owner or Owner's Representative at the point where the pressure is being monitored and shall show on the recorded pressure read-out submitted to the Owner.
6. All visible leaks are to be repaired regardless of the amount of leakage.

TP - 28.08 SITE CLEAN UP:

Upon completion of the work, the entire site shall be cleared of all debris, and the ground surface shall be finished to smooth and uniform slopes. Cleanup shall be considered an incidental item and no additional payment shall be made for it.

TP - 28.09 MEASUREMENT AND PAYMENT:

This section is intended to be a supplement for other technical provisions. Measurement and payment for HDPE pipe shall be included in the applicable section specifying the intended use, such as water pipe, water service line, sewer force main, or other pipe indicated as HDPE in the Bid Schedule or plans.

SUBMITTAL REVIEW FORM,

SECTION 28 – HDPE PIPE

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
28.03A 28.03B	HDPE Pipe and Fittings		
28.04	Joining Method		
28.04	Certifications		
28.04	Equipment		
28.07	Pressure Test Results		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 56 - HORIZONTAL DIRECTIONAL DRILLING

TP - 56.01 GENERAL:

The work specified in this section consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring or guided horizontal boring. This work shall include all labor, materials, equipment, and incidentals as required for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration. Contractor shall secure all necessary permits to complete the requirements of this Technical Provision. Contractor shall repair buildings, utilities and other improvements damaged by directional drilling at Contractor's own expense.

The work to be completed under these Technical Provisions includes the furnishing of all labor, materials, transportation, tools, supplies and appurtenances necessary to complete the crossings in accordance with the indicated requirements.

Qualifications: Contractor must have successfully completed work comparable in nature and scope to the required work of this project. The Contractor must furnish a minimum of three (3) project documents supporting the directional drilling Contractor's qualifications and experience of projects of a similar nominal diameter and length to the proposed project. Contractor shall submit the following information for each referenced project:

A. Name and general description of project.

B. List of key personnel.

C. Location of project.

D. Contract start and completion date.

E. Length and diameter of completed bore(s).

F. Description of pipe material.

G. Ground conditions.

H. Type of drilling equipment and installation equipment used.

TP - 56.02 SCOPE:

The Contractor shall install all pipe in accordance with the applicable drawings and these technical provisions. The Contractor shall install the pipe utilizing the HDD method described in this section.

TP - 56.03 MATERIALS & JOINTING METHOD:

A. Product Pipe: Select the casing and/or product pipe material according to the type of product indicated on the plans. The casing and/or carrier pipe must comply with all applicable technical provisions and ASTM standards depending on the purpose and material of the casing and product pipe. The Contractor shall inspect all pipe and appurtenances for defects and reject defective, damaged or unsound materials. Join the pipe sections so that the jointed pipe sections are installable using HDD. Ensure that the jointed casing and product pipes have adequate strength and flexibility to withstand the installation stresses, overburden pressures, and operating pressures without compromising the structural stability of the pipe wall. Ensure that the casing and product pipe meets the bend radius required for the proposed installation. Join the pipe sections so that the inner surfaces are flush and even.

   The following material standards are the minimum in place standards:

MATERIAL STANDARDS FOR HDD INSTALLATION		
Material Type:	**Non-Pressure:**	**Pressure:**
Polyethylene (PE) (NIC)	ASTM D 2447	ASTM 2513 ASTM D 2447
High Density Polyethylene (HDPE) (NIC)	ASTM D 2447 ASTM D 3350 ASTM F714	ASTM D 2447 ASTM F714
Polyvinyl-Chloride (PVC) (NIC)	ASTM F 789	ASTM D1785 ASTM D2241 AWWA C900/C905
Fusible HDPE		ASTM D3350, NSF-61 AWWA C906
Steel	ASTM A139 Grade B (1)	AWWA C200 API 2B(2)

(1) No hydrostatic test required

(2) Dimensional tolerances only

(3) (NIC) Not in contract

B. Fusion Technician Requirements: Fusion Technician shall be fully qualified as per the requirements in TP-28 by the pipe supplier to install fusible HDPE pipe type(s) and size(s) being specified.

C. Pipe Rollers: Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe during handling and pullback operations. A sufficient quantity of rollers and spacing shall be used to assure adequate support and resist excessive sagging of the product pipe per approved manufacturer's recommendations.

D. Jointing Method: HDPE pipe joining process shall be per TP-28 requirements.

E. Joint Recording: Each joint shall be recorded as per TP-28 requirements.

F. Tracer Wire: Tracer wire shall be 10 AWG copper clad steel wire with a minimum 1400-lb break load and 45 mil high molecular weight polyethylene jacket equal to Copperhead SoloShot Extra High Strength Tracer Wire or Agave Wire BoreTough Extra High Strength CCS 1400 UL. The tracer wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all trace wire access points. Jacket color for shall be BLUE for water pipe and GREEN for sewer pipe. Wire can only be spliced with an approved connector equal to Copperhead ACE Connector.

Tracer wire access points shall be Copperhead Roadway SnakePit as manufactured by Copperhead Industries, LLC or approved equal. Materials used to construct lid and tube shall be non-corrosive or corrosion resistant. Tube material shall be of high grade ABS, or equivalent rigid plastic that meets or exceeds ASTM D-1788, Type 1 requirements. Lid material shall be of cast iron or ductile iron and color-coded according to American Public Works Association (APWA) standards. Access point lid color shall be BLUE for water pipe and GREEN for sewer pipe.

TP - 56.04 STEEL AND FUSIBLE POLYETHYLENE PIPE INSERTION AND INSTALLATION:

A. Excavation and Access Pits:

1. Access pit length shall be such that the minimum bending radius for the steel and fusible HDPE pipe, per the pipe supplier, is maintained. Access pit excavation in regards to slope stability as well as sheeting, shoring and bracing requirements shall be in accordance with TP-01.

2. Access pit excavations shall be performed at all points where the fusible HDPE pipe will be inserted into the existing pipeline. When possible, access pit excavations shall coincide with host pipe lateral connection points or other appurtenance installations.

B. Pulling Equipment:

1. The pulling mechanism shall be properly connected to the end of the steel and fusible HDPE pipe via a pulling head or arrangement approved by the pipe supplier.
2. The maximum pulling tension on the steel and fusible HDPE pipe shall not exceed the pipe supplier's safe pulling force as submitted for this project.
3. Immediately following the completion of an installation by slip-lining, if possible, the pipe should be pushed back into the location of the insertion, at the pulling head, until a small amount of movement is realized at the insertion pit on the other side of the installation from the pulling equipment.

C. Fusible Polyethylene Pipe Care:

1. The fusible polyethylene pipe shall be handled with care to minimize the possibility of it being cut, kinked, gouged, or otherwise damaged. The use of cables or hooks will not be permitted. Weld seems shall be free of burs.
2. Sections of the fusible polyethylene pipe damaged, cut, or gouged shall be repaired by cutting out the section of damaged pipe and rejoining.

D. Pipe System Connections: Pipe connection materials, jointing and restraining shall be in accordance with TP-04 and TP 28 of these Technical Provisions, as well as per the connection manufacturer's guidelines and as indicated in the construction documents and as shown in the plans. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's guidelines. PVC pipe and HDPE pipe shall be connected with MJ adapter and have restrained joint connection for the PVC pipe, as recommended by pipe manufacturer.

E. Hydrostatic Testing and Leakage Testing for Pressure Piping: Hydrostatic and leakage testing for piping systems that contain mechanical jointing as well as fused HDPE jointing shall comply with TP-28.

F. Disinfection of the Pipeline for Potable Water Piping: After passing all other testing, the pipeline shall be disinfected prior to being put into service. Unless otherwise directed by the Owner or Owner's Representative, the pipeline will be disinfected per AWWA C651.

TP - 56.05 QUALITY ASSURANCE:

The requirements set forth in this document specify a wide range of procedural precautions necessary to insure that the very basic, essential aspects of a proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification. Adherence to the specifications contained herein, or the Owner or Owner's Representative approval of any aspect of any directional bore operation covered by this technical provision, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the contract.

TP - 56.06 EQUIPMENT REQUIREMENTS:

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a drilling fluid mixing and delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations and trained and competent personnel to operate the system. All equipment shall be in good, safe, operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

Ensure proper calibration of all equipment before commencing directional drilling operation. Take necessary measures to ensure accurate record drawings. Install all facilities such that their location can be readily determined by electronic designation after installation.

A. Drilling System: Match the HDD drill rig and its auxiliary pieces of equipment to the diameter and length of casing and product pipe being installed and ensure that the drill rod can meet the bend radius required for the proposed installation.

1. Drilling Rig: The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations.

2. Drill Head: The drill head shall be steerable by changing rotation and shall avoid the necessary cutting surfaces and drilling fluid jets.

3. Mud Motors (if required): Mud motors shall be of adequate power to turn the required drilling tools.

4. Drill Pipe: Drill pipe shall be constructed of high quality 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36 RC.

5. Guidance System: The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system. Select the locating and tracking system to provide information on:

   a) Clock and pitch information

   b) Depth

   c) Transmitter temperature

   d) Battery status

   e) Position (x,y)

   f) Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility)

B. Drilling Fluid (Mud) System:

1. Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be sized for adequate storage of the mud. Mixing system shall continually agitate the drilling fluid during drilling operations.

2. Drilling Fluids: Use a drilling fluid mixture composed of potable water and stabilizing agent (usually bentonite and/or polymer and/or appropriate additives) continuously pumped to the drill bit. Design/select the drilling fluid: to transport the spoils; maintain temperatures of bits and transmitter; clean cuttings from drill bit and reamers; reduce friction, pullback, and torque on drill rods, casing and product pipe; stabilize the borehole; control ground water pressure; and reduce migration of drilling fluids in soil. Use water with pH between 7.5 and 10 and free of chlorine with calcium < 100 ppm, sodium chloride < 500 ppm, and chlorine < 50 ppm. Hard water may be treated with soda ash to reach the required pH.

   Design the quantity and the mixture of drilling fluids to perform the preceding functions in the expected soil. Vary the fluid viscosity to best fit the encountered soil conditions. Do not use any other chemicals or polymer surfactants in the drilling fluid without written consent from the Owner or Owner's Representative. Certify to the Owner or Owner's Representative in writing that any added chemicals are environmentally safe and not harmful or corrosive to the casing and product pipe and the environment. Approvals and permits are required from utility departments or other permit

granting jurisdictions, for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than potable water requires a pH test.

3. Delivery System: The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12-inches high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

C. Other Equipment:

1. Pipe Rollers: Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe.

2. Pipe Rammers: Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of Owner or Owner's Representative.

TP - 56.07 DRILLING OPERATIONS:

A. General: The Owner or Owner's Representative must be notified 48 hours in advance of starting work. The Directional Bore shall not begin until the Owner or Owner's Representative is present at the job site and agrees that proper preparations for the operation have been made. The Owner's or Owner's Representative's approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract. It shall be the responsibility of the Owner or Owner's Representative to provide inspection personnel at such times as appropriate without causing undue hardship by reason of delay to the Contractor.

B. Personnel Requirements: All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety.

C. Drilling Procedure:

1. Site Preparation: Prior to any alteration to work-site, Contractor shall photograph or video tape entire work area, including entry and exit points. One copy of which shall be given to the Owner or Owner' Representative and one copy to remain with Contractor for a period of one year following completion of the project.

2. Work Site: Work site as indicated on the plans, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

3. Drill Path Survey: Depth of the bore along its entire alignment shall be based on the design plans. Prior to the start of the boring operation, survey the work site with x, y, z coordinates at control point at 100/LF intervals at minimum along the planned bore path. Provide stakes at offset distances (left or right) from the centerline at these control points and at all known existing utility crossings. Submit this information to the Owner or Owner's Representative at least 24 hours before the start of pilot bore operations.

4. Pilot Hole: Drill the pilot hole along the path shown on the plans and profile drawings within the allowable tolerance of the type of utility. Provide and maintain instrumentation necessary to accurately locate the pilot hole (both horizontal and vertical placements). Measure the vertical deviation of the boring, and immediately notify the Owner or Owner's Representative if the boring

deviates from the alignment or grade required by the plans. Ensure adequate removal of soil cuttings and stability of the bore hole by monitoring the drilling fluids parameters such as the pumping rate, pressures, viscosity and density during the pilot bore, back reaming, and casing and product pipe installation. Relief holes can be used as necessary to relieve excess pressure down hole. Obtain Owner or Owner's Representative approval of the location and all conditions necessary to construct relief holes. Maintain proper disposition of drilling fluids and minimize inconvenience to other facility users.

5. Pull Back Operations: To minimize heaving during pull back, use a pullback rate that maximizes the removal of soil cuttings without building excess down-hole pressure. Owner or Owner Representative approval is required for pullback velocities over 2 feet per minute. Contractor shall monitor tensile load on pipe during pull-back operation and not exceed the manufacturer's recommendation for allowable tensile load.

6. Excess Drilling Fluids: Contain excess drilling fluids at entry and exit points until the recycle, vacuum, or removal from the site during drilling operations. Ensure that entry and exit containments are of sufficient size to contain the expected return of drilling fluids and soil cuttings. Carry out excavation and backfill for entry, exit, recovery pits, connection pits, slurry sump pits, or any other excavation as specified in Technical Provision 01.

7. Disposal and Contamination: Ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate federal regulatory agencies. When drilling in contaminated ground, test the drilling fluid for contamination and appropriately dispose of it. The Owner or Owner's Representative will adjust the contract value and/or time if the Contractor was not notified about the contamination during the bidding phase. Remove any excess material upon completion of the bore. Contact the Owner or Owner's Representative immediately if it becomes evident that the soil is contaminated in the drilling process. Do not continue drilling without the Owner or Owner's Representative's consent.

8. Locating Facilities: Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a continuous conductive tracking (tracer wire) materials, either externally, internally or integral with the product. Tracking conductors must extend two feet beyond bore termini. Test conductors for continuity.

9. Clean Up: Within 48 hours of completing the installation, clean the work site of all excess slurry or spoils, de-mobilize equipment, and ensure that the site is safe and secured.

D. Environmental Protection: Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berming, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water-body or wetland.

E. Safety: Contractor shall adhere to all applicable federal and local safety regulations and all operations shall be conducted in a safe manner.

F. Pilot Hole: In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a Mach funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor shall cease operations and notify the Owner or Owner's Representative. Owner or Owner's Representative and Contractor will discuss additional options and work will then proceed accordingly.

G. Reaming: Upon successful completion of pilot hole, Contractor shall ream bore hole to a minimum identified in the table using the appropriate tools. Contractor shall not attempt to ream at one time more than drilling equipment and mud system are designed to safely handle.

The following table includes the diameter of the back-reamer related to the diameter of the casing and product pipe.

Product Diameter	Reamed Diameter
< 8”	Diameter of product + 4”
8” – 24”	Diameter of product x 1.5
> 24”	Diameter of product + 12”

H. Pull-Back: After successfully reaming bore hole to the required diameter, Contractor shall pull the pipe and tracer wire through the bore hole. To protect the tracer wire during pull-back, secure tracer wire to the trailing end of a short section chain welded to the drilling head or attach the wire under the expander. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, Contractor shall not apply more than the maximum safe pipe pull pressure at any time as per the manufacturer’s recommendations.

In the event that the pipe becomes stuck, Contractor shall cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, Contractor shall notify Owner or Owner’s Representative. Owner or Owner’s Representative and Contractor shall discuss options and then work will proceed accordingly.

Pull an extra 3 to 5 percent of the total pipe length to allow for pipe relaxation. After HDPE pipe has been installed, allow pipe to relax for a minimum of 12 hours prior to connecting to adjacent pipe.

TP - 56.08 CLEAN UP:

Following drilling operations, Contractor shall de-mobilize equipment and restore the work-site to original conditions. All excavations shall be backfilled and compacted per TP-01. Landscaping shall be restored to original conditions. Buildings, utilities, and other improvements damaged by directional drilling shall be repaired at no additional expense. All mud shall be disposed of by the Contractor.

TP - 56.09 SUBMITTALS:

A. Work Plan: Prior to beginning work, submit to the Owner or Owner’s Representative a Work Plan detailing the procedure and schedule to execute the project. The work plan will be comprehensive, realistic, and based on actual working conditions for the particular project. The work plan documents the planning required to successfully complete the project. The work plan includes complete descriptions of proposed plans, procedures, equipment, personnel, and if applicable, supporting material, for the following:

1. Drilling operations: Describe the pilot hole drilling procedure, the reaming operation, the pullback procedure, and illustrate the plan.
2. Profile of the bore plotted at a scale appropriate for the crossing and acceptable to the Owner or Owner’s Representative.
3. HDD site layout including entry and exit points with angle of entry.
4. Fusion technician qualification conformance certification from manufacturer.
5. Recommended minimum bending radius, for all materials, casing and carrier pipe.
6. Recommended maximum safe pull force, for all materials, casing and carrier pipe.

7. Directional drilling equipment list includes: drilling rig, drill bit, back-reamer, mud mixing and pumping systems, down-hole tools, guidance system, and rig safety system. Provide calibration records for guidance equipment.
8. Drilling fluid management plan: Identify drilling fluid types and specifications, cleaning and recycling equipment, estimated flow rates, procedures for minimizing drilling fluid escape, and the method/location for final disposal of waste drilling fluids. Provide the SDS for all drilling fluid additives that will be used.
9. Pipe storage and handling details.
10. Pipeline assembly and installation procedures for both casing pipe and product pipe.
11. SDS of any potentially hazardous substances to be used.
12. Contingency plans for possible problems.
    1. Submit supporting calculations, certifications, or material demonstrating the strength of the casing and product pipes for acceptance before the beginning of the installation. Submit for the Owner or Owner's Representative's acceptance prior to construction, other casing and product pipe material than those listed on the plans. Demonstrate that the proposed material satisfies the purpose of the utility and withstands the design and construction stresses and pressures.
    2. If site conditions change and require modification to the work plan, resubmit revised drilling plans to achieve successful installation. Explain, in the revised submittal, the anticipated and encountered conditions that mandated the change in plans.

B. Daily Reports and Operator Logs: Submit daily reports to the Owner or Owner's Representative within 24 hours. Include in the daily reports a log of boring operations and guidance system for each drill rod added or withdrawn during drilling, reaming, and pullback. The log covers downhole tools and equipment in use, drilling fluid, fluid pumping rate, drilling head location. The report shall provide details of and perceived reasons for events and delays greater than one hour excluding normal breaks.

C. Record Drawings: At the completion of the HDD casing and product pipe installation, the General Contractor will provide the Owner or Owner's Representative marked up plans noting all deviations from the plans that result in change of location, material, type or size of work guided by the boring operations and guidance system log. Post on the drawing the x, y, and z coordinates of the starting and ending points of the line at minimum. Include in the marked up plans, the station number or reference to a permanent structure within the project right-of-way, name of person collecting data, including title, position and company name, detection method used, and elevations and offset dimensions. Certify the accuracy of the drawing to the capability of the tracking system.

D. As-Recorded Data: The following as-recorded data are required from the Contractor:
    1. Approved data logger device reports.
    2. Fusion joint documentation containing the following information:
        a) Pipe Size and Thickness
        b) Machine Size
        c) Fusion Technician Identification
        d) Job Identification
        e) Fusion Joint Number
        f) Fusion, Heating, and Drag Pressure Settings

g) Heat Plate Temperature

h) Time Stamp

i) Heating and Cool Down Time of Fusion

j) Ambient Temperature

TP - 56.10 MEASUREMENT AND PAYMENT:

Horizontal Directional Drilling: The horizontal direction drilling shall be measured in linear feet along the centerline of the pipe. Payment for horizontal direction drilling shall be at the contract unit price shown on the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required to drilling the hole for the installation of the proposed pipe, including excavation of pilot hole and pull-back pit, trench backfilling, pipe pull-back, record drawings, and final cleanup. The payment for pipe is paid separately as shown on the Bid Schedule.

SUBMITTAL REVIEW FORM, SECTION 56 – HORIZONTAL DIRECTIONAL DRILLING

	Date	Initials		
			Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
56.01	Qualifications		
56.03A	Pipe & Casing		
56.02F	Tracer wire, access points and splice kit		
56.04D	PVC to HDPE Transition		
56.06.A.5	Guidance System		
56.09A & 56.09B	Work Plan, Daily Reports, Operator Logs		
56.09C & 56.09D	Record Drawings As-Recorded Data		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

At the close of each day's work, and at times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer. Joints of all pipe in the trench shall be completed before the work is stopped. If water is in the trench, the seal shall remain in place until the trench is pumped dry.

610.4.5 Testing: Hydrostatic testing shall be in accordance with Section 611 . After pressure testing and before placing in service, all water lines shall be disinfected. Disinfection shall be accomplished in accordance with Section 611. All corporation stops used for testing and chlorination shall be left in the pipeline with the stop closed and all connecting pipe removed.

610.5 SEPARATION:

610.5.1 General: Water lines and sewer lines shall be separated to protect water lines from contamination by sewer lines.

The angle of a water line and sewer line crossing shall be limited to between (45) forty-five degrees and (90) ninety degrees. Intersection angles of less than (45) forty-five degrees shall not be allowed.

Separation distances are measured from the outside diameter of the water or sewer line, or the centerline of a manhole.

When water and sewer lines cannot meet separation requirements, extra protection is required as described in Subsection 610.5.5 and shown in Standard Details 404-1, 404-2 and 404-3. Alternate construction techniques, materials, and joints shall be reviewed and approved by the Contracting Agency and Maricopa County Environmental Services Department.

Extra protection requirements for line crossings are measured from the closest outside surfaces of the sewer and water line.

Water line service connections to individual building supply and distribution plumbing shall not be placed below sewer lines, and shall otherwise comply with the separation requirements of the applicable plumbing code as applied by the Agency (Administrative Authority). Methods described for extra protection do not apply to these service lines.

Water and sewer lines shall not be constructed parallel within a common trench.

610.5.2 Water Line Separation from Gravity Sewer Lines: Water lines shall not be placed within two (2) feet horizontal and one (1) foot vertical above and two (2) feet vertical below gravity sewer lines.

Extra protection is required where a water line is placed within six (6) feet horizontal and two (2) feet vertical above a gravity sewer line.

Extra protection is required where a water line is placed within six (6) feet horizontal and any distance below a gravity sewer line.

610.5.3 Water Line Separation from Pressurized Sewer Lines: Water lines shall not be placed within six (6) feet horizontal and within two (2) feet vertical below or within two (2) vertical above a pressurized sewer line.

Extra protection is required where a water line is placed within six (6) feet horizontal and within six (6) feet vertical above a pressurized sewer line.

Extra protection is required where a water line is placed within (6) feet horizontal and any distance below a pressurized sewer line.

610.5.4 Water Line Separation from Manholes: Water lines shall not pass through or come into contact with any part of a sewer manhole and shall be separated six (6) feet horizontal from the center of a sewer manhole.

610.5.5 Extra Protection: New water lines that require extra protection from new sewer lines, shall have extra protection provided by using ductile iron pipe for both lines. Lines of standard pipe length shall be centered at the point of crossing so that no joints exist within six (feet) horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal. Alternate encasement sleeving can be used to house the carrier pipe subject to Contracting Agency and Maricopa County Environmental Services Department approval.

New water lines that require extra protection from sewer lines shall have identification wrap and/or tape installed on the water and sewer lines for the length that requires extra protection for each line.

New water lines that require extra protection from existing sewer lines shall be constructed using the extra protection specified for new water lines, and the existing sewer line:

(1) shall be reconstructed using a standard length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal, or

(2) shall be encased in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Alternate extra protection, subject to approval by Contracting Agency and Maricopa County Environmental Services Department, may be provided by:

(3) encasing existing sewer line in a steel casing per Section 602, centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal, or

(4) lining existing sewer line using Cured in Place Pipe for a horizontal distance from the point of crossing no less than ten (10) feet horizontal in each direction.

Existing water lines that require extra protection from new sewer lines shall provide for extra protection by:

(1) constructing the new sewer line and reconstructing the existing water line using ductile iron pipe for both lines with standard pipe lengths centered at the point of crossing so that no joints exist within six (feet) horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or

(2) encasement of both the existing water line and the new sewer line in six (6) inches of concrete for the horizontal distance of the lines that require extra protection but for a distance no less than ten (10) feet horizontal.

(3) Extra protection for existing ductile iron water lines can be met by the installation of restrained or mechanical joints on the existing water line within ten (10) feet horizontal of the crossing and either

(a) construction of new sewer line using a standard pipe length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or

(b) encasement of the new sewer line in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Alternate extra protection, subject to approval by Contracting Agency and Maricopa County Environmental Services Department, may be provided by:

(c) encasing new sewer line in a steel casing per Section 602 measured at the point of crossing so that no joint exists with six (6) feet horizontal and only restrained or mechanical joints exist with ten (10) feet.

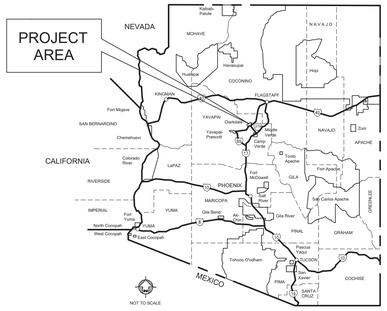
610.6 POLYETHYLENE CORROSION PROTECTION:

610.6.1 General: Where called for in the plans and specifications or directed by the Engineer, pipe, valves and fittings shall be protected from corrosion by encasement in a polyethylene protective wrapping referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

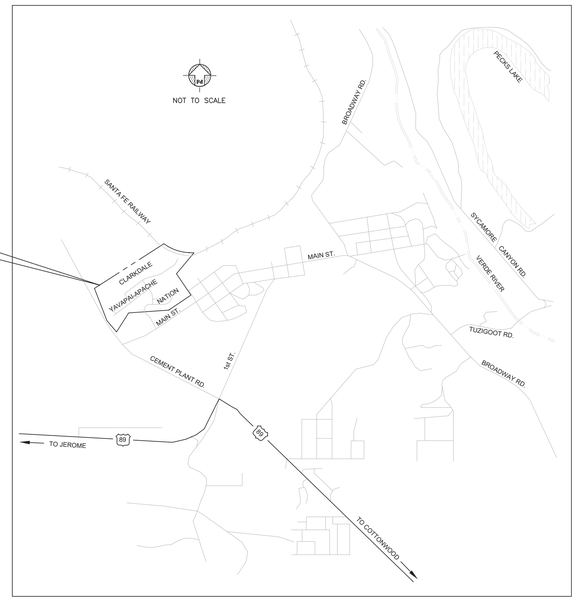
610.6.2 Materials: The polywrap shall be of virgin polyethylene, not less than 8 *mils* in thickness, formed into tubes or sheets as may be required. Naturally, pigmented material may be used where exposure to ultraviolet light will be less than 48 hours.

EXHIBIT I – PLAN SET

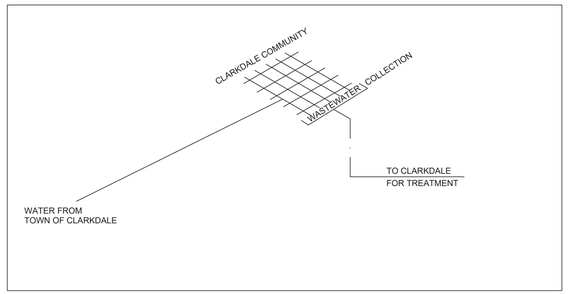
YAVAPAI-APACHE
CLARKDALE COMMUNITY
YAVAPAI COUNTY, ARIZONA
CLARKDALE WATER IMPROVEMENTS
PH 18-V24 & 20-V75 WA 11-19



LOCATION MAP



CLARKDALE



SYSTEM SCHEMATIC

Sheet List Table		
Sheet Number	Layout	Sheet Title
		GENERAL
01	G-001	COVER SHEET
02	G-002	ABBREVIATIONS AND SYMBOLS
		CIVIL
03	C-001	PROJECT AREA - COORDINATES
04	C-002	PROJECT AREA - SHEET LAYOUT
05	C-101	STA. 0+00 - STA. 4+20 HOOD ST.
06	C-102	STA. 4+20 - STA. 8+40 HOOD ST.
07	C-103	STA. 8+40 - STA. 10+11 HOOD ST.
08	C-104	STA. 12+00 - STA. 14+71 STARR ST.
09	C-105	STA. 15+00 - STA. 17+60 JACKSON ST.
10	C-106	STA. 18+00 - STA. 22+20 RUSSELL ST.
11	C-107	STA. 22+20 - STA. 26+10 RUSSELL ST.
12	C-108	STA. 26+10 - STA. 30+00 RUSSELL ST.
13	C-109	STA. 30+00 - STA. 34+30 RUSSELL ST.
14	C-110	STA. 35+00 - STA. 39+30 BONNAHA AVE.
15	C-111	STA. 39+30 - STA. 41+66 BONNAHA AVE.
16	C-112	STA. 42+00 - STA. 46+20 BEECHER ST.
17	C-113	STA. 46+20 - STA. 50+10 BEECHER ST.
18	C-114	STA. 50+10 - STA. 52+74 BEECHER ST.
19	C-501	DETAILS 01
20	C-502	DETAILS 02
21	C-503	DETAILS 03
22	C-504	DETAILS 04
23	C-505	DETAILS 05
24	C-506	DETAILS 06

DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/29/2026 ARIZONA, U.S.A.

JOEL GARCIA -S — Digitally signed by JOEL GARCIA -S Date: 2026.10.29 10:37:45 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
COVER SHEET
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
PROJ ENG: JOEL GRACIA
FILE NAME: V24-COVERSHT
WA NUMBER: 11-19

G-001
SHEET 01 OF 24

GENERAL NOTES

1. THE UTILITIES SHOWN IN THE PLAN AND PROFILE ARE INDICATED IN ACCORDANCE WITH AVAILABLE RECORDS. ALL UTILITIES MAY NOT BE SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES FROM THE OWNERS OF RESPECTIVE UTILITIES. ALL UTILITIES SHALL BE NOTIFIED AT LEAST 72 HOURS PRIOR TO EXCAVATION. ANY DAMAGE TO UTILITIES SHALL BE THE RESPONSIBILITY OF CONTRACTOR.
2. ALL MINOR OBSTRUCTIONS MAY NOT BE SHOWN ON PLANS. THE CONTRACTOR SHALL VISIT THE SITE AND DETERMINE THE ACTUAL CONDITIONS WITH REGARD TO THE EXISTENCE OF FENCES, DRIVEWAYS, TREES, SIDEWALKS, CULVERTS, UTILITIES AND OTHER MISCELLANEOUS OBSTACLES THAT MAY INTERFERE WITH CONSTRUCTION PRIOR TO SUBMITTING BIDS.
3. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL TO EXISTING PRIOR TO CONSTRUCTION. EXCESS CONSTRUCTION MATERIALS, EQUIPMENT, TOOLS, WASTE EXCAVATION, AND RUBBISH SHALL BE REMOVED. EXCAVATED AREAS SHALL BE FINISH GRADED TO PROVIDE DRAINAGE AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS. IN THE ABSENCE OF SPECIFIC REQUIREMENTS, DRAINAGE SHALL BE PROVIDED AWAY FROM THE CONSTRUCTED FACILITIES. ORIGINAL DRAINAGE PATTERNS IN EXISTENCE PRIOR TO CONSTRUCTION SHALL BE RESTORED.
4. DUE TO THEIR SIZE, SYMBOLS ON THE DRAWINGS MAY NOT REPRESENT THE EXACT LOCATION OF EITHER PROPOSED OR EXISTING UTILITIES. EXAMPLES MAY INCLUDE GATE VALVES & HYDRANTS.
5. POWER AND TELEPHONE POLES MAY NOT BE SHOWN ON PLANS. CONTRACTOR SHALL PROVIDE/ARRANGE BRACING OF POWER AND TELEPHONE POLES DURING CONSTRUCTION AS REQUIRED AS PART OF THE CONTRACT PRICE.
6. ALL BURIED D.I. PIPE AND FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE FILM IN ACCORDANCE WITH AWWA C-105.
7. CONTRACTOR MUST CONFORM WITH ALL REQUIREMENTS OF THE OSHA STANDARD FOR EXCAVATION SAFETY (29 CFR 1926 SUBPART P).
8. CONTRACTOR IS RESPONSIBLE FOR THE CONTENTS OF THE PROJECT TECHNICAL PROVISIONS AND THE PROJECT MANUAL.
9. THE OWNER AND IHS SHALL BE NOTIFIED 24 HOURS PRIOR TO STARTING OF WORK.
10. ALL WORK AND MATERIALS WHICH DO NOT CONFORM TO THE SPECIFICATIONS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
11. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE OF THE OWNER AND IHS REPRESENTATIVES IS SUBJECT TO REMOVAL AND REPLACEMENT OF SAME TO BE DONE AT THE CONTRACTORS EXPENSE.
12. THE CONTRACTOR SHALL PROVIDE SUFFICIENT PEOPLE AND EQUIPMENT ON THE JOB AT ALL TIMES DURING CONSTRUCTION TO COMPLY WITH SPECIFICATIONS AND TO COMPLETE WORK.
13. THE CONTRACTOR IS TO UNCOVER ALL EXISTING LINES BEING TIED INTO AND VERIFY GRADES BEFORE ANY OTHER CONSTRUCTION.
14. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY PRACTICES UTILIZED IN CONNECTION WITH THE WORK. THE ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS NOR ANY COSTS INCURRED, WHETHER INITIAL OR ADDITIONAL, TO CORRECT, MODIFY, OR ALTER ANY CONSTRUCTION COMPLETED CONTRARY TO THE CONTRACT DOCUMENTS.
15. PRIOR TO BIDDING THE WORK, THE CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE ACTUAL CONDITIONS, QUANTITIES, ETC. NO CLAIM SHALL BE MADE AGAINST THE OWNER FOR ANY EXCESS OR DEFICIENCY THEREIN, ACTUAL OR RELATIVE.
16. ALL PIPE AND CONDUIT SHOWN ON THESE PLANS ARE DESIGNED BASED ON REQUIREMENTS AS ESTABLISHED BY THE MANUFACTURER. PRECAUTIONS MUST BE TAKEN FOR CONSTRUCTION EQUIPMENT EXCEEDING THE INTENDED PIPE TRAFFIC LOADS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE CONDUIT FROM THE WEIGHT OF THE MACHINERY. THE ADEQUACY OF THE COVER REQUIREMENTS FOR CONDUITS SHALL BE ANALYZED AND CHECKED BY THE CONTRACTOR TO ADDRESS LOADING CONDITIONS IMPOSED BY CONSTRUCTION ACTIVITY. ANY CONDUIT DAMAGED BY CONSTRUCTION ACTIVITY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
17. ALL EARTHWORK CONSTRUCTION SHALL CONFORM TO THE LATEST PHOENIX AREA OFFICE (PAO) TECHNICAL PROVISIONS, PAO DETAILS, DRAWING DETAILS, OTHER SPECIFIED SPECIFICATIONS AND DETAILS AND DETAIL DRAWINGS DETAILS INCLUDING ANY SUPPLEMENTS.
18. THE CONTRACTOR IS REQUIRED TO CONTACT DIG ALERT (8-1-1) TWO FULL WORKING DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE RELOCATION OF ALL UTILITIES, POWER POLES, ETC. THAT MAY BE NECESSARY.

UTILITIES

YAVAPAI-APACHE NATION UTILITY DEPARTMENT
2400 W. DATSI STREET
CAMP VERDE, AZ 86322
HERBERT TRUJILLO
(928) 301-6885

ENGINEERING:

WESTERN ARIZONA DISTRICT OFFICE
INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091
FAX: (480) 592-0096

LEGEND

PROPOSED

- WATER MAIN
- WATER SERVICE LINE
- SEWER MAIN
- SEWER SERVICE LINE - CLAY
- SEWER FORCE MAIN
- SEWER FORCE SERVICE LINE
- STORM SEWER
- SEWER MANHOLES
- ONE-WAY CLEANOUT
- TWO-WAY CLEANOUT
- SEPTIC TANK
- LIFT STATION
- DIRECTION OF FLOW
- GATE VALVES
- FIRE HYDRANT
- FLUSH HYDRANT
- AIR RELEASE/VACUUM VALVE
- SADDLE W/CORPORATION STOP
- CURB STOP W/BOX
- INDIVIDUAL PRESSURE RELEASE VALVE
- YARD HYDRANT
- METER PIT/BOX
- IN-GROUND PRESSURE TANK
- WELL

EXISTING

- WATER MAIN
- WATER SERVICE LINE
- SEWER MAIN
- SEWER SERVICE LINE - CLAY
- SEWER FORCE MAIN
- SEWER FORCE SERVICE LINE
- STORM SEWER
- SEWER MANHOLES
- ONE-WAY CLEANOUT
- TWO-WAY CLEANOUT
- SEPTIC TANK
- LIFT STATION
- DIRECTION OF FLOW
- GATE VALVES
- FIRE HYDRANT
- FLUSH HYDRANT
- AIR RELEASE/VACUUM VALVE
- SADDLE W/CORPORATION STOP
- CURB STOP W/BOX
- INDIVIDUAL PRESSURE RELEASE VALVE
- YARD HYDRANT
- METER PIT/BOX
- IN-GROUND PRESSURE TANK
- WELL

GENERAL

- BENCHMARK
- IRON PIN
- CARSONITE MAKER
- CONTOUR LINE
- CULVERT
- LIGHT POLE
- POWER POLE
- PROPANE TANK
- ROAD (DIRT/GRAVEL)
- ROAD (PAVED)
- ROAD (CURB)
- ROAD BORING/CROSSING
- SIGN
- SOIL BORING
- SWAMP
- TELEPHONE PED
- TRACING WIRE BOX
- TREE
- WASH CROSSING
- GAS LINE
- TELEPHONE LINE
- ELECTRIC LINE
- CABLE TV LINE
- FIBER OPTIC
- OVERHEAD WIRE
- LANDSCAPE AREA
- TREELINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- BUILDING LINE
- EASEMENT LINE
- LOT LINE
- FENCE CHAINLINK
- FENCE WIRE
- FENCE WOOD
- FENCE WROUGHT IRON
- FENCE GAURD RAIL
- RAILROAD
- SKIP DASH - FOR STRIPING
- WASH
- SPEED BUMP

ABBREVIATIONS

AC	ASBESTOS CEMENT	MAX	MAXIMUM
APPROX	APPROXIMATE	MIN	MINIMUM
ARV	AIR RELEASE VALVE	MH	MANHOLE
BOV	BLOW OFF VALVE	MJ	MECHANICAL JOINTS
CF	CUBIC FEET	NC	NORMALLY CLOSED
CL	CENTERLINE	NTS	NOT TO SCALE
CO	CLEANOUT	OC	ON CENTER
DI	DUCTILE IRON	OD	OUTTER DIMENSION
DIA	DIAMETER	OHE	OVERHEAD ELECTRIC
ELEV	ELEVATION	PP	POWER POLE
EOP	EDGE OF PAVEMENT	PROP	PROPOSED
EX	EXISTING	PVC	POLYVINYL CHLORIDE
FFE	FINISHED FLOOR ELEVATION	R	RADIUS
FH	FIRE HYDRANT	SCH	SCHEDULE
FM	FORCE MAIN	STA	STATION
FL	FLANGE	STB	STACKING BOLTS
GALV	GALVANIZED	STL	STEEL
GPM	GALLONS PER MINUTE	TBA	TO BE ABANDONED
GV	GATE VALVE	TBD	TO BE DETERMINED
HDPE	HIGH DENSITY POLYETHYLENE	VERT	VERTICAL
HORIZ	HORIZONTAL	W	WATER
ID	INNER DIMENSION	W/	WITH
IHS	INDIAN HEALTH SERVICE	WST	WATER STORAGE TANK
IGV	IRRIGATION GATE VALVE	WTP	WATER TREATMENT PLANT
LS	LIFT STATION	WWTF	WASTE WATER TREATMENT FACILITY

DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/01/2026 ARIZONA, U.S.A.

JOEL GARCIA -S — Digitally signed by JOEL GARCIA -S Date: 2026.10.29 10:38:19 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
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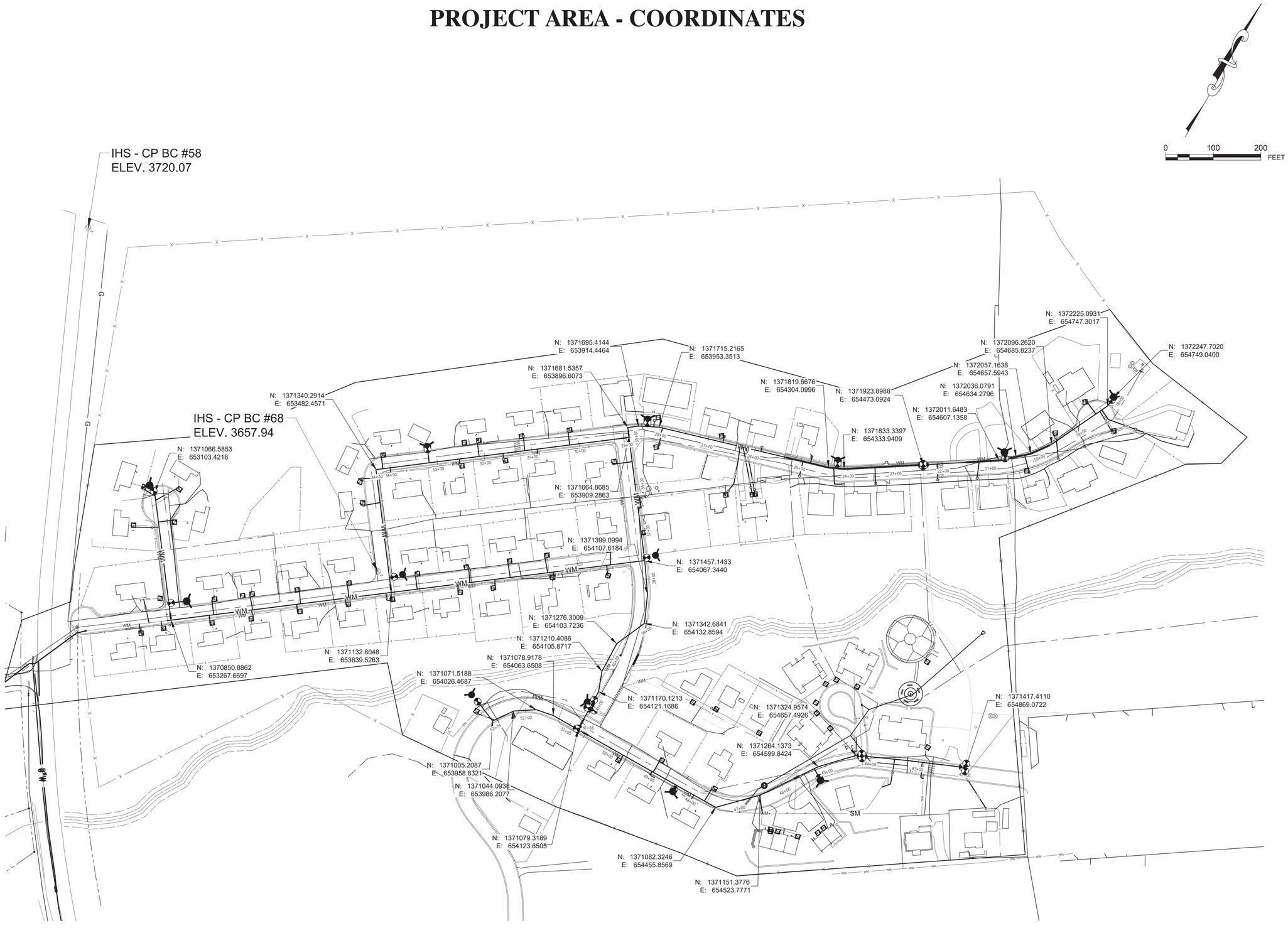
YAVAPAI-APACHE NATION HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
ABBREVIATIONS AND SYMBOLS
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-LEGEND
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

G-002
SHEET 02 OF 24

PROJECT AREA - COORDINATES



DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:38:47 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
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INDIAN HEALTH SERVICE
1955

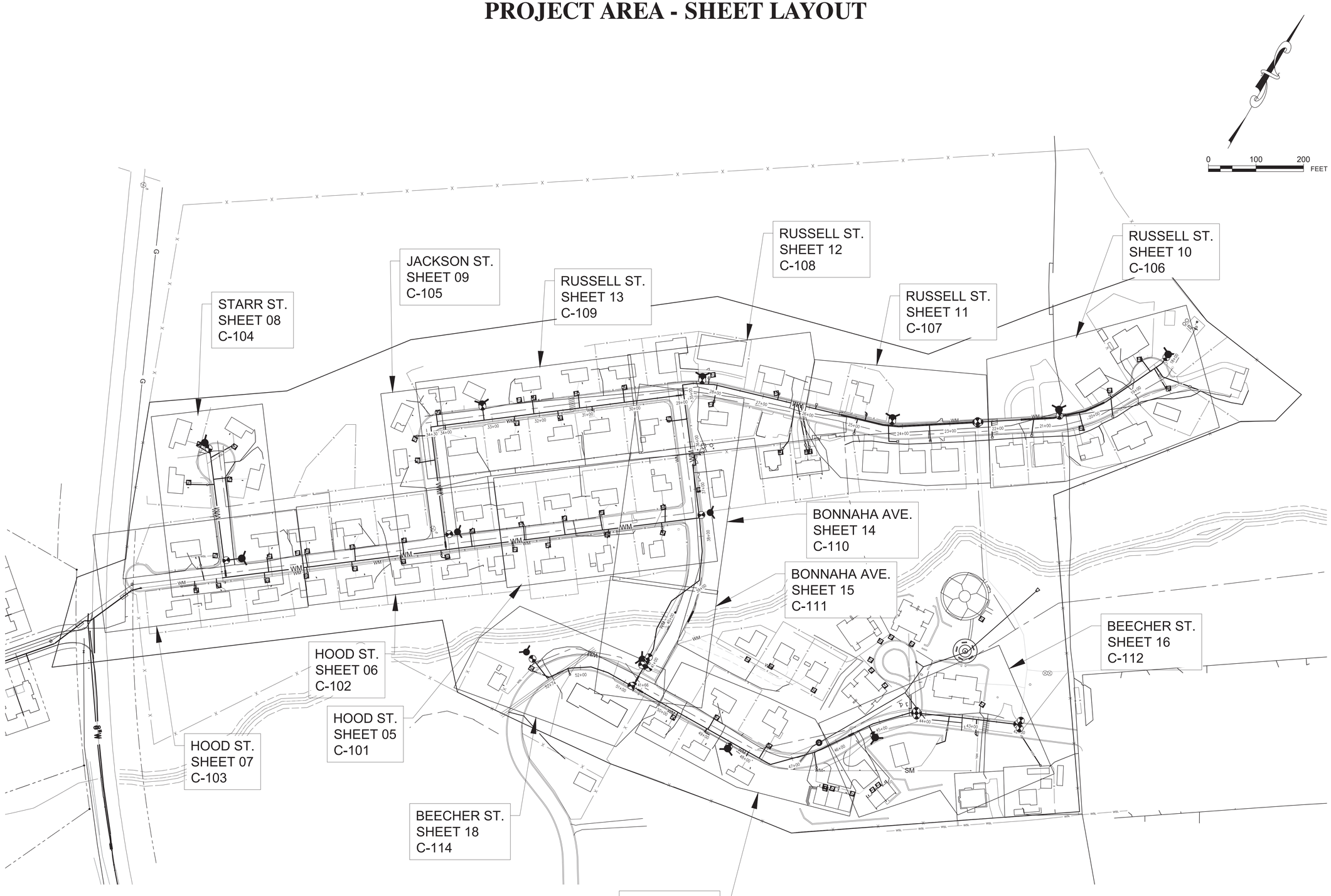
CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
PROJECT AREA - COORDINATES
PH 18-V24 & 20-V75

DRAWN BY: C.S.	DATE: 09-2026	FILE NAME: Y24-PPF-30-2025	
CHECKED BY: D.A.	DATE: 10-2026	WA NUMBER: 11-19	
APPROVED BY: D.A.	DATE: 10-2026	PROJ ENG: JOEL GRACIA	

C-001

SHEET 03 OF 24

PROJECT AREA - SHEET LAYOUT



DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:39:16 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

INDIAN HEALTH SERVICE 1955

CLARKDALE

YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
PROJECT AREA - SHEET LAYOUT
PH 18-V24 & 20-V75

DRAWN BY: C.S.
CHECKED BY: D.A.
APPROVED BY: D.A.

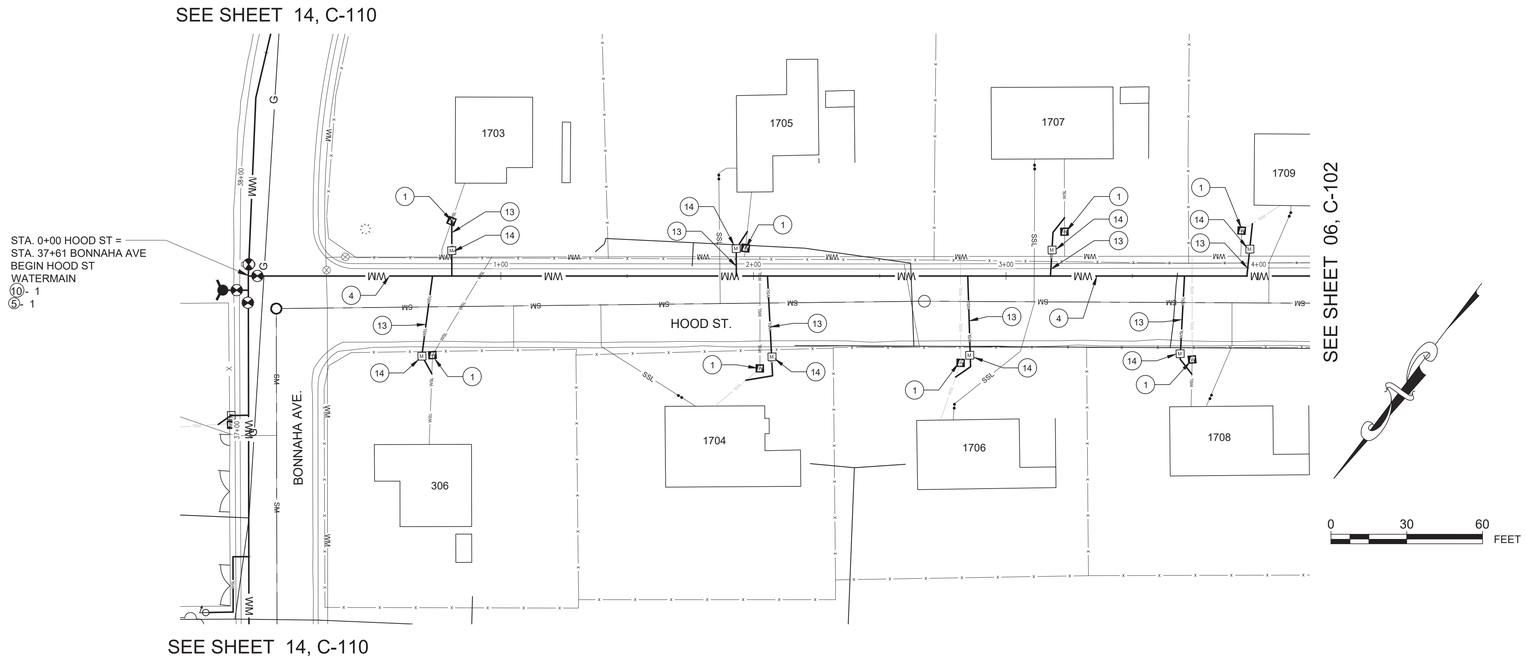
DATE: 09-2026
DATE: 10-2026
DATE: 10-2026

FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-002

SHEET 04 OF 24

STA. 0+00 - STA. 4+20 HOOD ST.



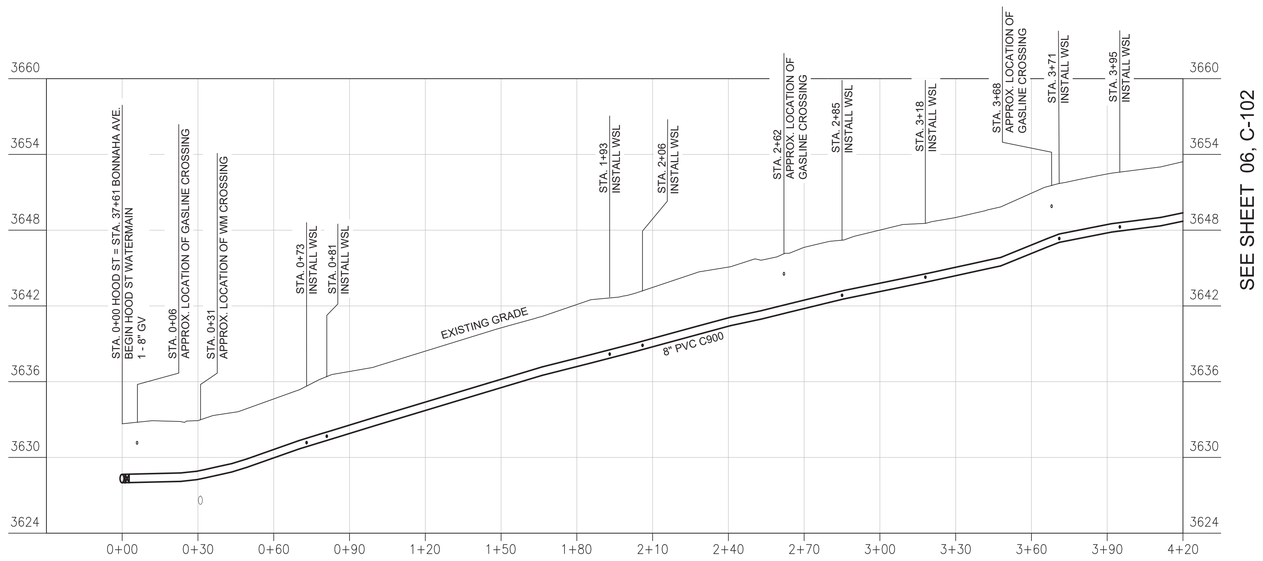
CONSTRUCTION NOTES

(*NOTES WITH STRIKE-THROUGH DO NOT APPLY TO THIS SHEET)

1. REMOVE EXISTING WATER METER ASSEMBLY, CONNECT TO EXISTING SERVICE LINE TO EXISTING LINE, AND BACKFILL
2. ~~REMOVE EXISTING FIRE HYDRANT TO A MINIMUM DEPTH OF 2' BELOW GRADE AND GATE VALVE AND COVER~~
3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
4. INSTALL 8" WATERMAIN, PVC C900 DR18 PER PAO TP-04.03B
5. INSTALL 8" GATE VALVE PER, SHEET 24, DETAIL 4B
6. ~~INSTALL 8" 11 1/4° PER, SHEET 21, DETAIL 4A~~
7. ~~INSTALL 8" 22 1/2° BEND PER, SHEET 21, DETAIL 4A~~
8. ~~INSTALL 8" 45° BEND PER, SHEET 21, DETAIL 4A~~
9. ~~INSTALL 8" 90° BEND PER, SHEET 21, DETAIL 4A~~
10. INSTALL 8"x8"x8" TEE PER, SHEET 21, DETAIL 4A
11. ~~INSTALL 8"x4"x8" TEE PER, SHEET 21, DETAIL 4A~~
12. ~~INSTALL 8"x8"x6" TEE PER, SHEET 21, DETAIL 4A~~
13. INSTALL 1" P.E. SERVICE LINE PER, SHEET 20, DETAIL 5A
14. INSTALL WATER METER ASSEMBLY PER, SHEET 20, DETAIL 5A
15. ~~INSTALL 6" D.I. AWWA C150/C151 PIPE PER, SHEET 19, DETAIL 4C, PER PAO TP-04.03B~~
16. ~~INSTALL FIRE HYDRANT AND GATE VALVE PER, SHEET 19, DETAIL 4C~~
17. ~~INSTALL 3 BOLLARDS PER, SHEET 23, DETAIL 1C~~
18. ~~INSTALL 8"x6" REDUCER MJxMJ~~
19. ~~INSTALL EXTRA PROTECTION D.I.P. PER, SHEET 19, DETAIL 404-2, PAO TP-04.03B2~~
20. ~~INSTALL 2" PE 4710 WATER SERVICE LINE PER, PAO TP-05.03A~~
21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
22. ~~SEE SHEET 22, HDPE WASH CROSSING~~
23. ~~INSTALL COMBINATION AIR RELEASE/VACUUM VALVE PER, SHEET 20, DETAIL 4F-1~~
24. ~~INSTALL END CAP ON EXISTING WATERMAIN~~
25. ~~INSTALL 6" GATE VALVE PER, SHEET 24, DETAIL 4B~~
26. ~~INSTALL PVC TO HDPE CONNECTION PER, SHEET 22, HDPE WASH CROSSING DETAIL~~
27. ~~INSTALL HDPE JOINT AND ANCHOR BLOCK PER, SHEET 22, HDPE WASH CROSSING DETAIL~~

GENERAL NOTE:

1. ALL DISTURBED PAVED AREAS OR CURBS SHALL BE SAW CUT TO THE MINIMUM DIMENSIONS ALLOWED ON THE DETAILS TO INSTALL THE WATERMAIN, WATER SERVICE CONNECTIONS AND RELATED APPURTENANCES. NO ADDITIONAL PAYMENT WILL MADE FOR ASPHALT REPAIR BEYOND THE MINIMUM SAW CUT DIMENSIONS ALLOWED ON THE RESURFACING DETAIL ON SHEET 23, DETAIL 200-2. CONCRETE CURB AND GUTTER SHALL NOT BE DISTURBED UNLESS REQUIRED TO MEET MINIMUM WIDTH REQUIREMENT.
2. CONTRACTOR TO RESTORE ALL FENCES BACK TO THEIR ORIGINAL CONDITION OR BETTER.
3. ALL AREAS WHERE ITEMS ARE IDENTIFIED FOR REMOVAL OR ABANDONMENT SHALL BE PROPERLY BACKFILLED, COMPACTED AND NEATLY GRADED TO MATCH EXISTING SURROUNDINGS.
4. CONTRACTORS MUST VERIFY ALL FIELD DIMENSIONS, ELEVATIONS AND EXISTING SITE CONDITIONS-INCLUDING UTILITIES-BEFORE STARTING WORK OR ORDERING MATERIALS.



SEE SHEET 06, C-102

NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil) CERTIFICATE No. 87774 JOEL GARCIA Date Signed 10/29/2026 ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:40:26 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

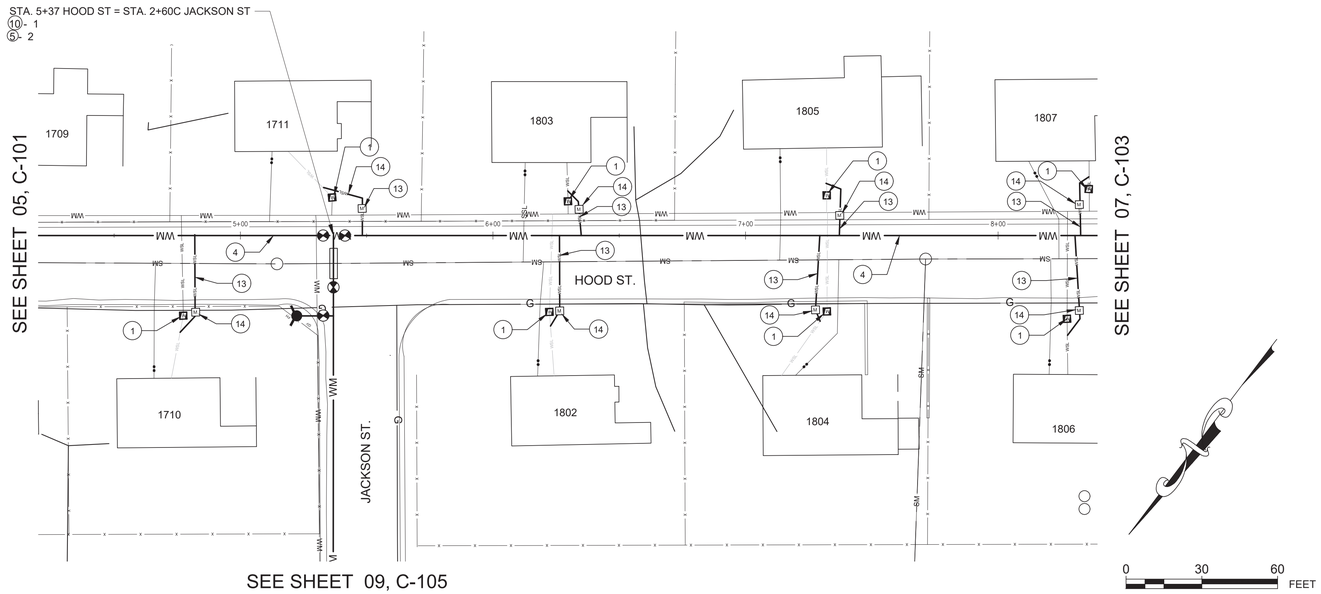
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 0+00 - STA. 4+20 HOOD ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-101
SHEET 05 OF 24

STA. 4+20 - STA. 8+40 HOOD ST.



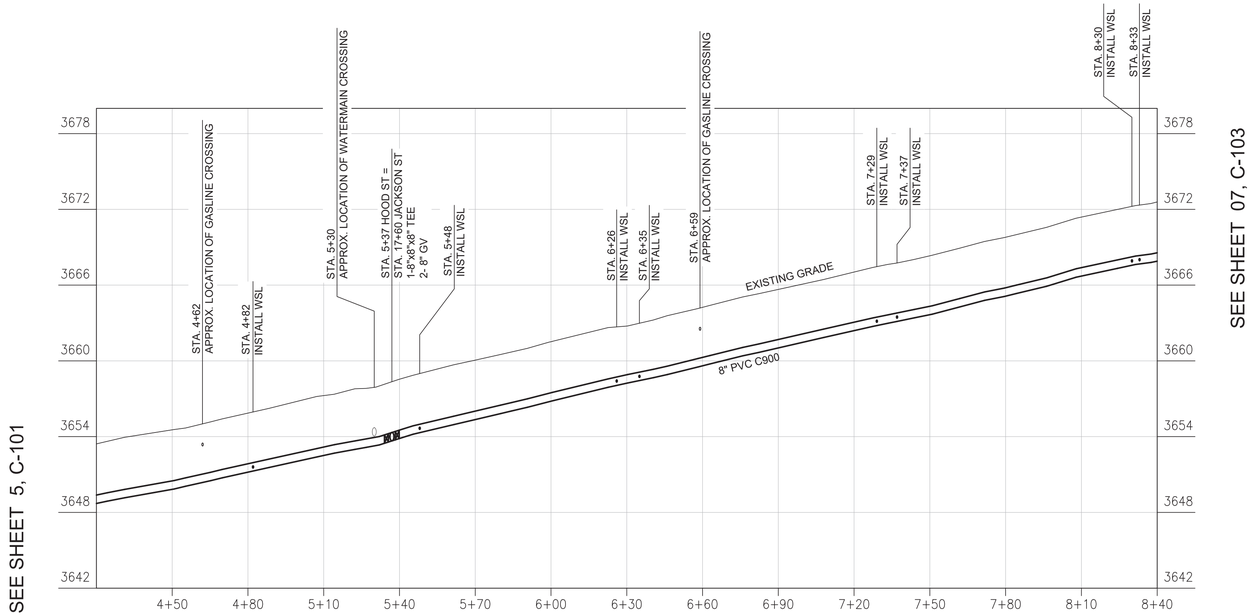
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GENERAL NOTE:

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NOTE:
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HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:41:28 -07'00'

INDIAN HEALTH SERVICE
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WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
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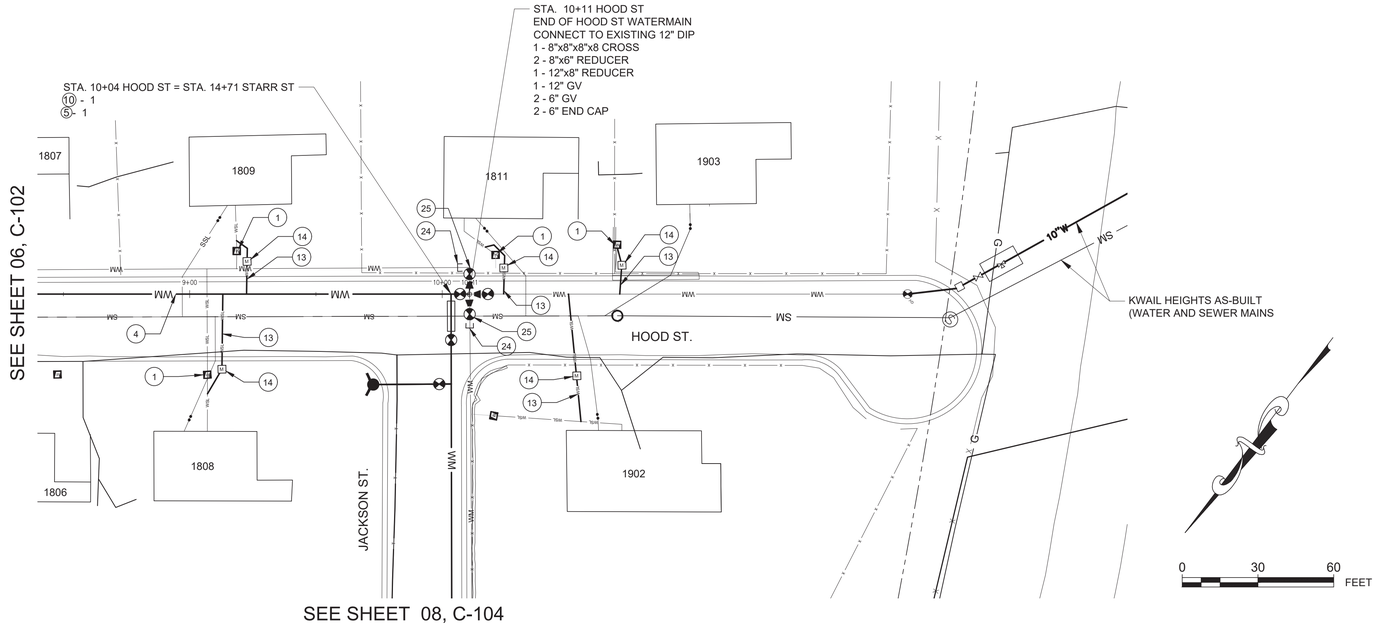
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 4+20 - STA. 8+40 HOOD ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-102
SHEET 06 OF 24

STA. 8+40 - STA. 10+11 HOOD ST.



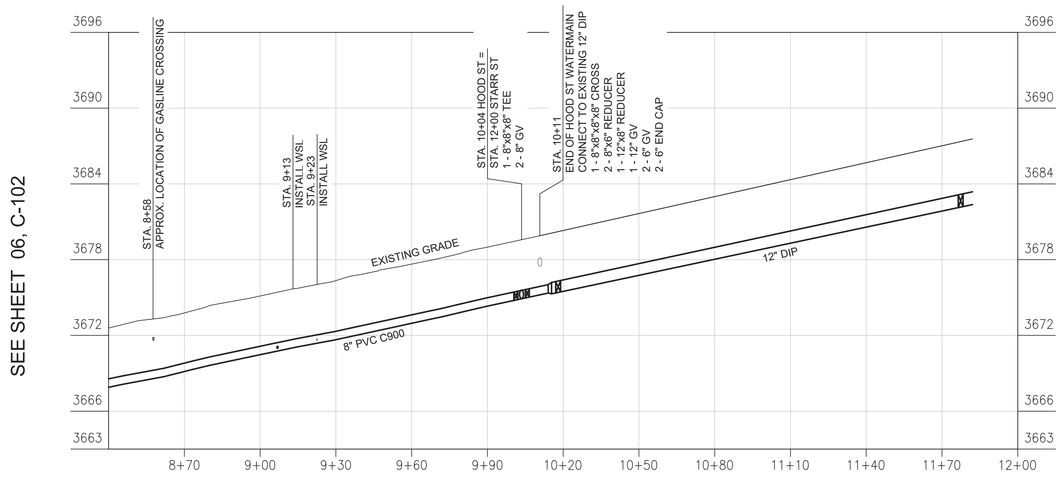
CONSTRUCTION NOTES

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HORIZONTAL SCALE: 1"=30'
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DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
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Date Signed
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INDIAN HEALTH SERVICE
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1553 WEST TODD DRIVE, SUITE 104
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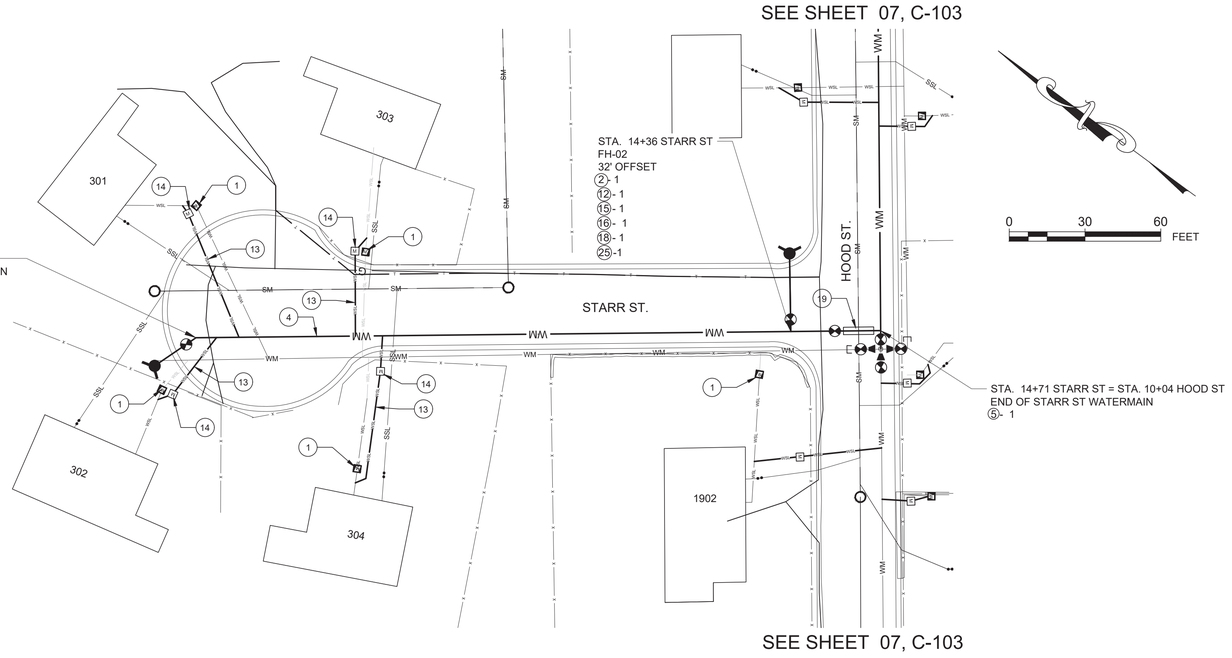
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 8+40 - STA. 10+11 HOOD ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-PPP-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-103
SHEET 07 OF 24

STA. 12+00 - STA. 14+71 STARR ST.



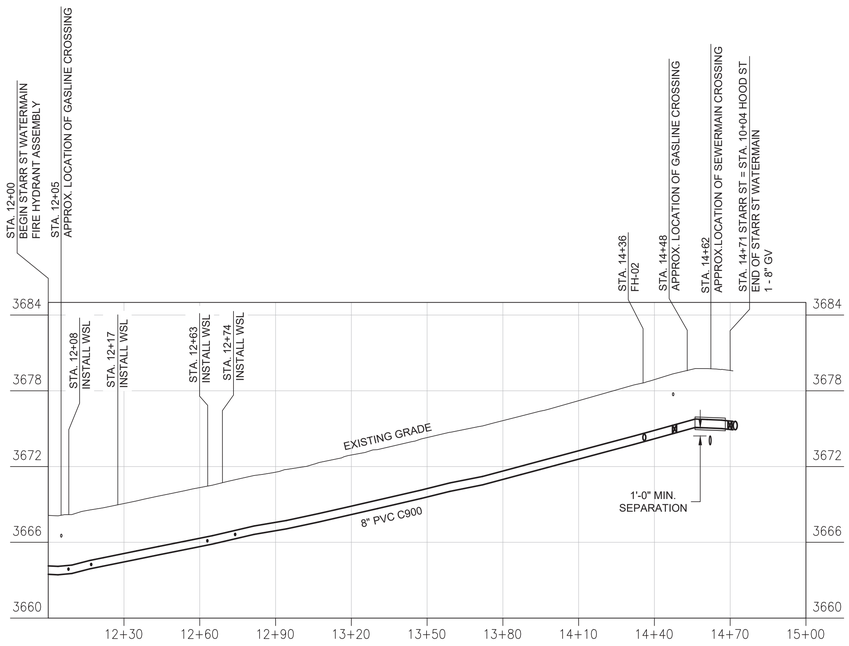
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GENERAL NOTE:

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NOTE:
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HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date signed 10/29/2026 ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:42:31 -07'00'

INDIAN HEALTH SERVICE
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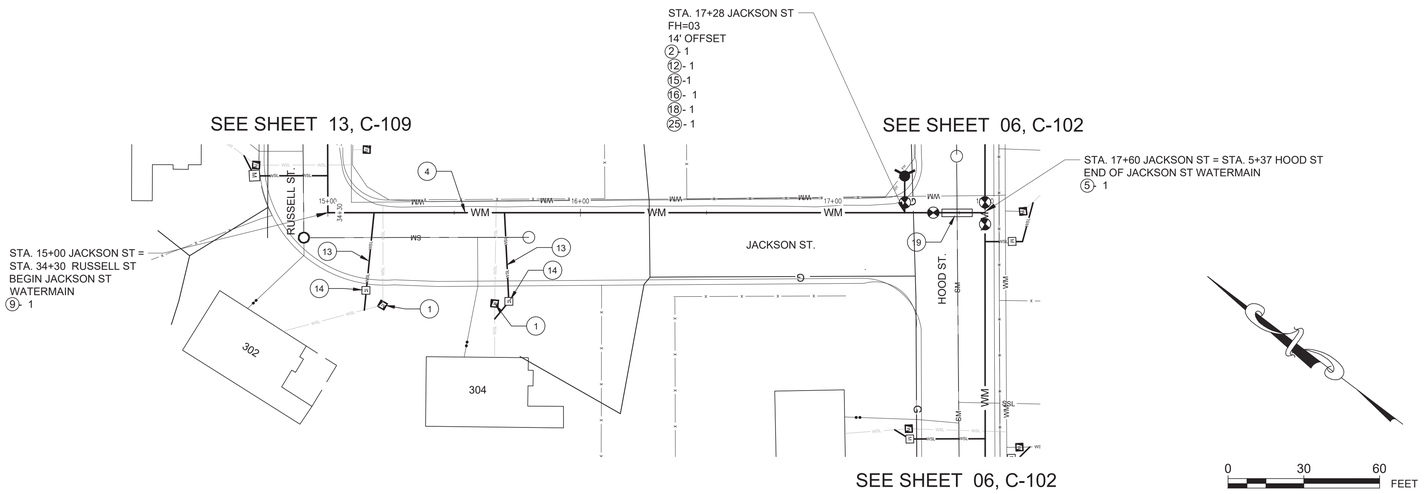
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 12+00 - STA. 14+71 STARR ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
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FILE NAME: V24-PPP-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-104
SHEET 08 OF 24

STA. 15+00 - STA. 17+60 JACKSON ST.



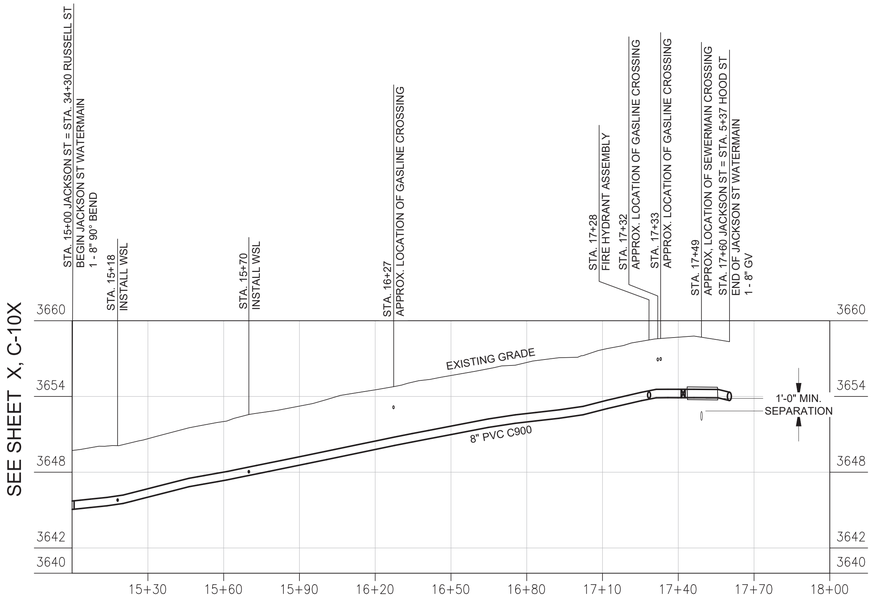
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3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
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5. INSTALL 8" GATE VALVE PER, SHEET 24, DETAIL 4B
6. ~~INSTALL 8" 11 1/4° PER, SHEET 21, DETAIL 4A~~
7. ~~INSTALL 8" 22 1/2° BEND PER, SHEET 21, DETAIL 4A~~
8. ~~INSTALL 8" 45° BEND PER, SHEET 21, DETAIL 4A~~
9. INSTALL 8" 90° BEND PER, SHEET 21, DETAIL 4A
10. ~~INSTALL 8"x8"x8" TEE PER, SHEET 21, DETAIL 4A~~
11. ~~INSTALL 8"x4"x8" TEE PER, SHEET 21, DETAIL 4A~~
12. INSTALL 8"x8"x6" TEE PER, SHEET 21, DETAIL 4A
13. INSTALL 1" P.E. SERVICE LINE PER, SHEET 20, DETAIL 5A
14. INSTALL WATER METER ASSEMBLY PER, SHEET 20, DETAIL 5A
15. INSTALL 6" D.I. AWWA C150/C151 PIPE PER, SHEET 19, DETAIL 4C, PER PAO TP-04.03B
16. INSTALL FIRE HYDRANT AND GATE VALVE PER, SHEET 19, DETAIL 4C
17. ~~INSTALL 3 BOLLARDS PER, SHEET 23, DETAIL 1C~~
18. INSTALL 8"x6" REDUCER MJxMJ
19. ~~INSTALL EXTRA PROTECTION D.I.P. PER, SHEET 19, DETAIL 404-2, PAO TP-04.03B2~~
20. ~~INSTALL 2" PE 4710 WATER SERVICE LINE PER, PAO TP-05.03A~~
21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
22. ~~SEE SHEET 22, HDPE WASH CROSSING~~
23. ~~INSTALL COMBINATION AIR RELEASE/VACUUM VALVE PER, SHEET 20, DETAIL 4F-1~~
24. ~~INSTALL END CAP ON EXISTING WATERMAIN~~
25. INSTALL 6" GATE VALVE PER, SHEET 24, DETAIL 4B
26. ~~INSTALL PVC TO HDPE CONNECTION PER, SHEET 22, HDPE WASH CROSSING DETAIL~~
27. ~~INSTALL HDPE JOINT AND ANCHOR BLOCK PER, SHEET 22, HDPE WASH CROSSING DETAIL~~

GENERAL NOTE:

1. ALL DISTURBED PAVED AREAS OR CURBS SHALL BE SAW CUT TO THE MINIMUM DIMENSIONS ALLOWED ON THE DETAILS TO INSTALL THE WATERMAIN, WATER SERVICE CONNECTIONS AND RELATED APPURTENANCES. NO ADDITIONAL PAYMENT WILL MADE FOR ASPHALT REPAIR BEYOND THE MINIMUM SAW CUT DIMENSIONS ALLOWED ON THE RESURFACING DETAIL ON SHEET 23, DETAIL 200-2. CONCRETE CURB AND GUTTER SHALL NOT BE DISTURBED UNLESS REQUIRED TO MEET MINIMUM WIDTH REQUIREMENT.
2. CONTRACTOR TO RESTORE ALL FENCES BACK TO THEIR ORIGINAL CONDITION OR BETTER.
3. ALL AREAS WHERE ITEMS ARE IDENTIFIED FOR REMOVAL OR ABANDONMENT SHALL BE PROPERLY BACKFILLED, COMPACTED AND NEATLY GRADED TO MATCH EXISTING SURROUNDINGS.
4. CONTRACTORS MUST VERIFY ALL FIELD DIMENSIONS, ELEVATIONS AND EXISTING SITE CONDITIONS-INCLUDING UTILITIES-BEFORE STARTING WORK OR ORDERING MATERIALS.



NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:43:50 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

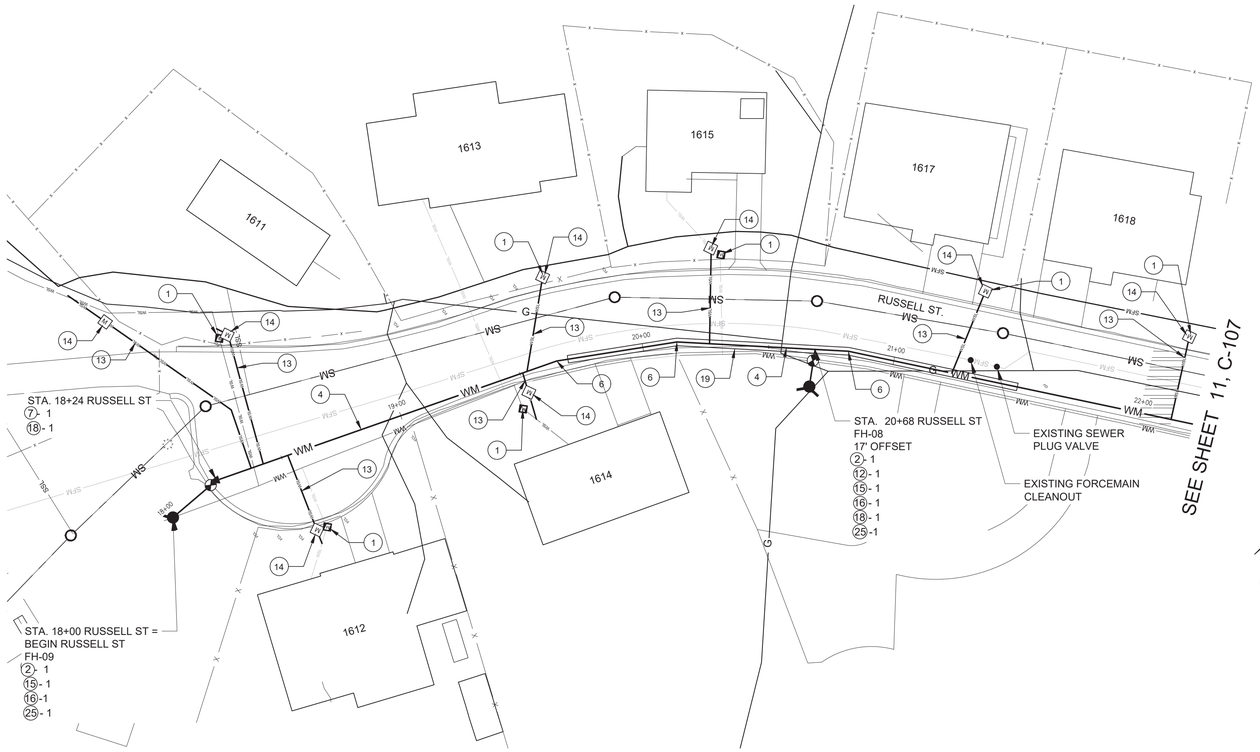
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 15+00 - STA. 17+60 JACKSON ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-105
SHEET 09 OF 24

STA. 18+00 - STA. 22+20 RUSSELL ST.



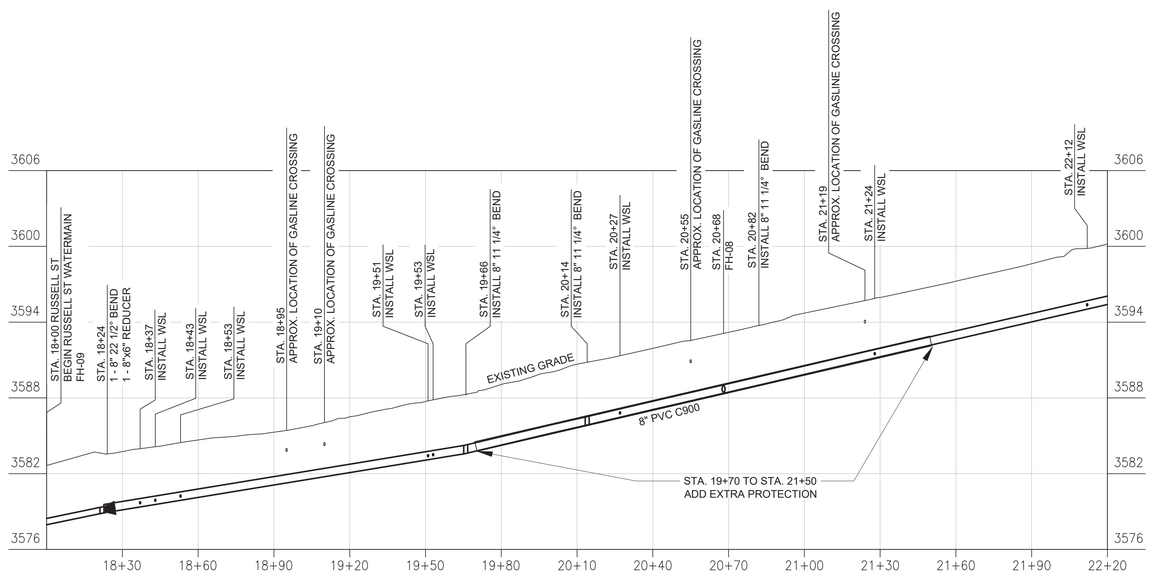
CONSTRUCTION NOTES

(*NOTES WITH STRIKE-THROUGH DO NOT APPLY TO THIS SHEET)

1. REMOVE EXISTING WATER METER ASSEMBLY, CONNECT TO EXISTING SERVICE LINE TO EXISTING LINE, AND BACKFILL
2. REMOVE EXISTING FIRE HYDRANT TO A MINIMUM DEPTH OF 2' BELOW GRADE AND GATE VALVE AND COVER
3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
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SEE SHEET 11, C-107

NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:44:24 -07'00'

INDIAN HEALTH SERVICE
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WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

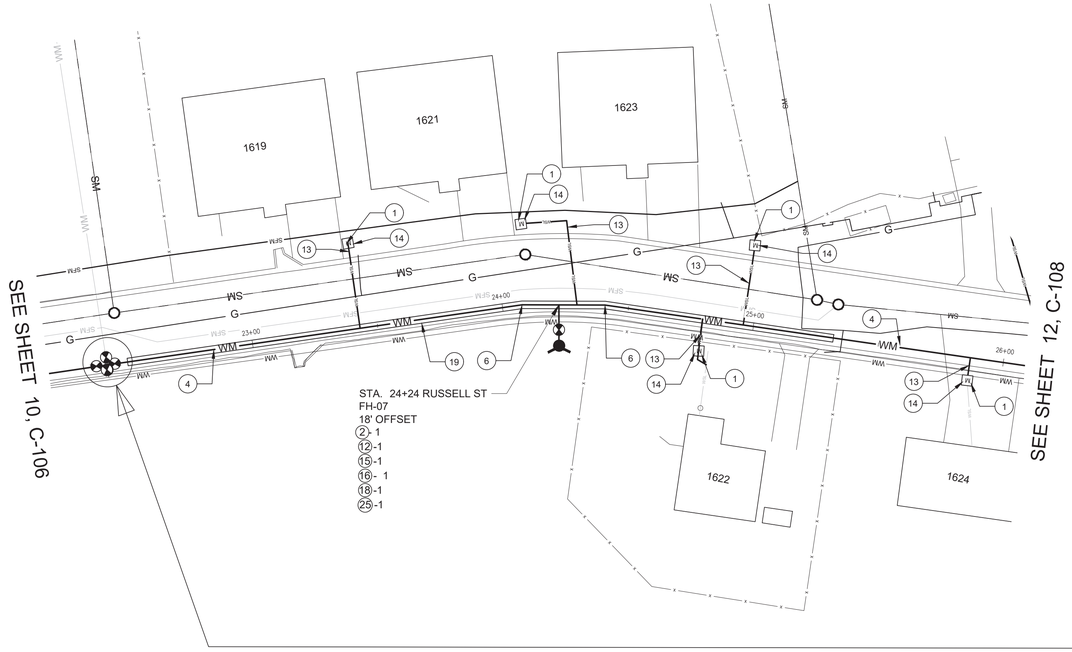
INDIAN HEALTH SERVICE 1955

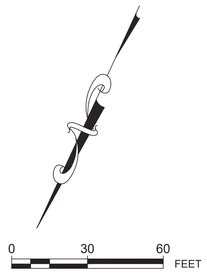
CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 18+00 STA. 22+20 RUSSELL ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S.
CHECKED BY: D.A.
APPROVED BY: D.A.
DATE: 09-2026
DATE: 10-2026
DATE: 10-2026
FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-106
SHEET 10 OF 24

STA. 22+20 - STA. 26+10 RUSSELL ST.





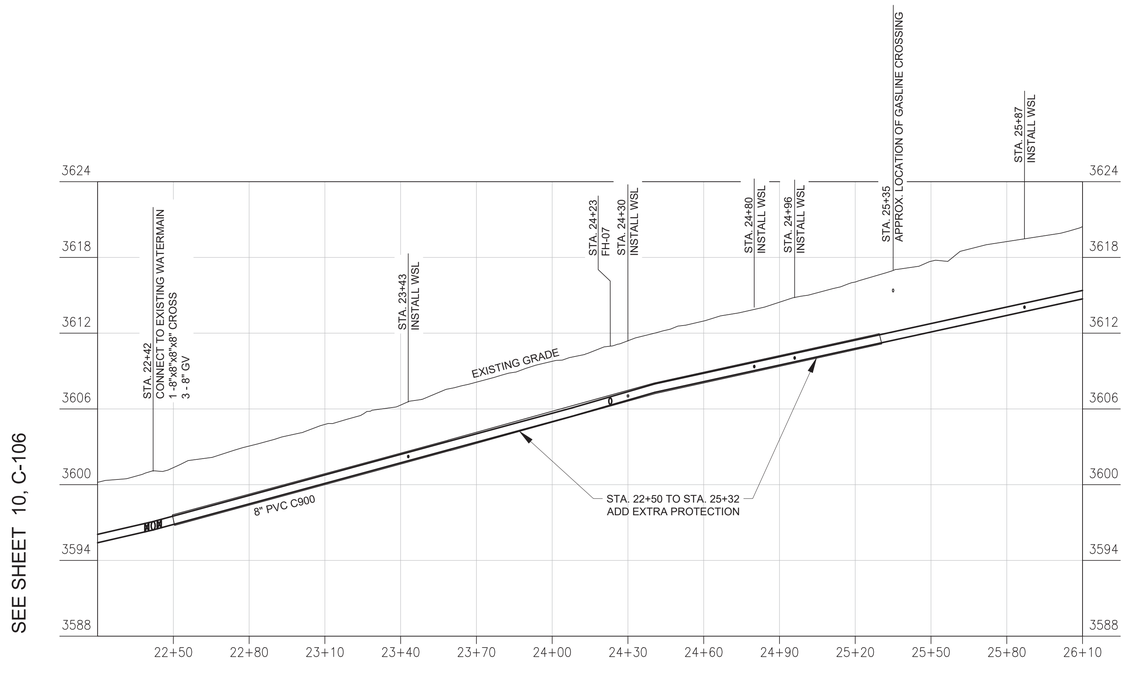
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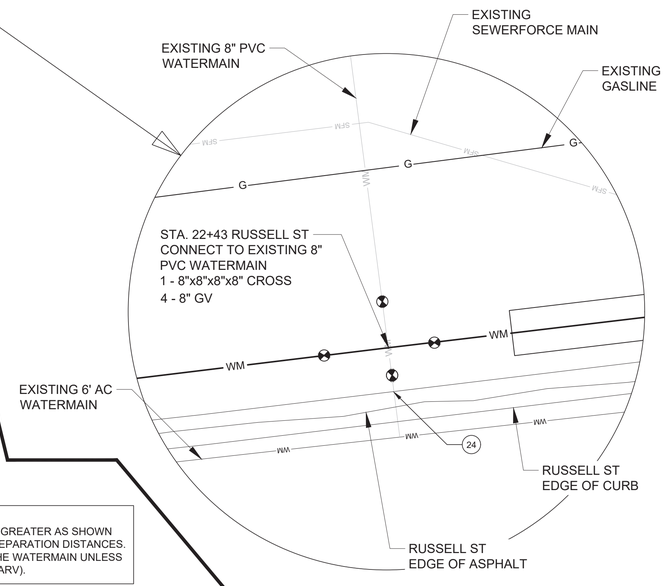
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NOTE:
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HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'



DATE | REVISIONS | INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date signed 10/29/25 ARIZONA, U.S.A.

JOEL GARCIA -S — Digitally signed by JOEL GARCIA -S Date: 2026.10.29 10:44:55 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

INDIAN HEALTH SERVICE 1955

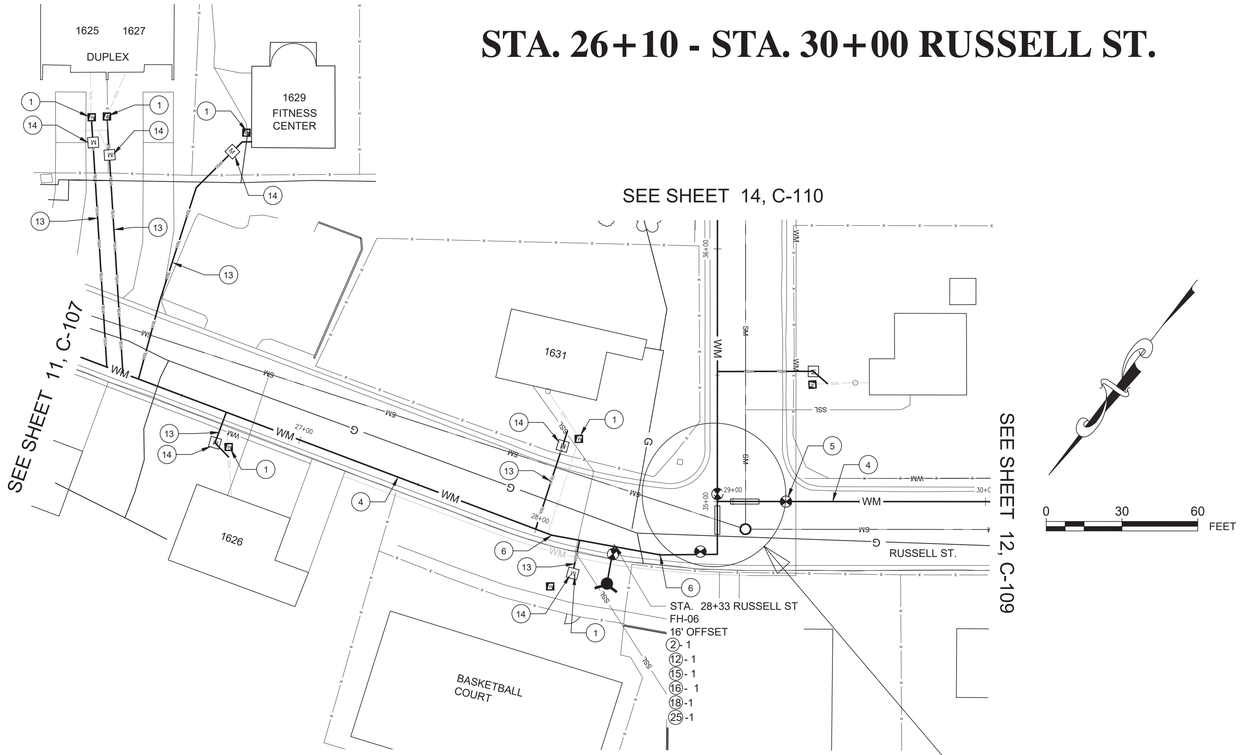
CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 22+20 - STA. 26+10 RUSSELL ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. — DATE: 09-2026
CHECKED BY: D.A. — DATE: 10-2026
APPROVED BY: D.A. — DATE: 10-2026

FILE NAME: V24-PFF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-107
SHEET 11 OF 24

STA. 26+10 - STA. 30+00 RUSSELL ST.



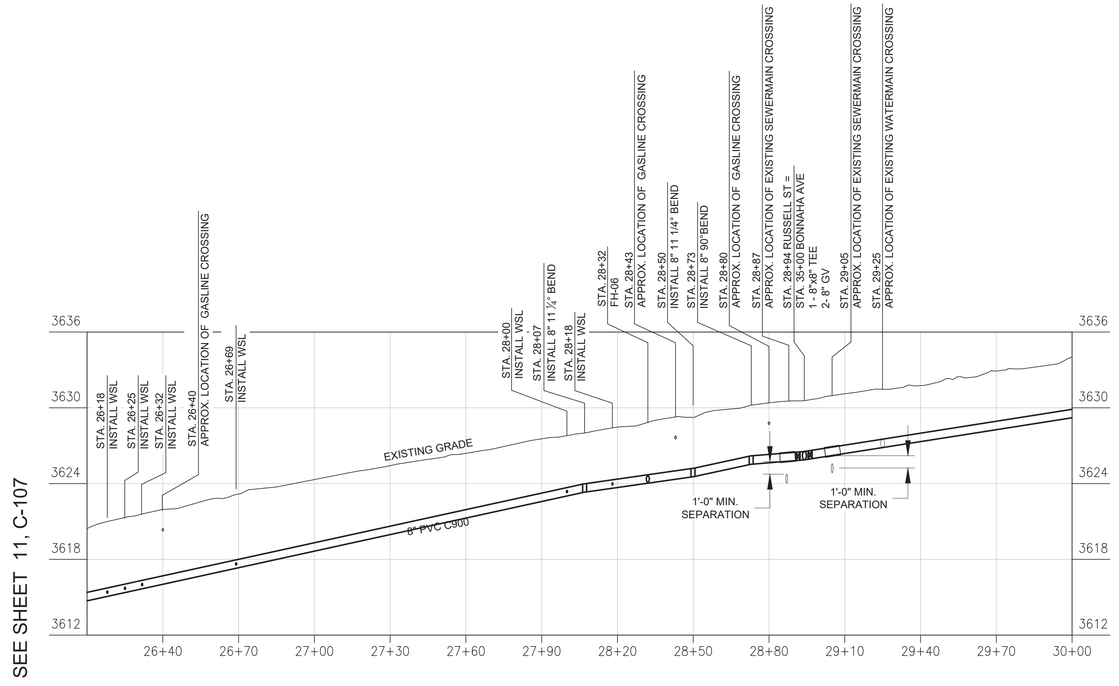
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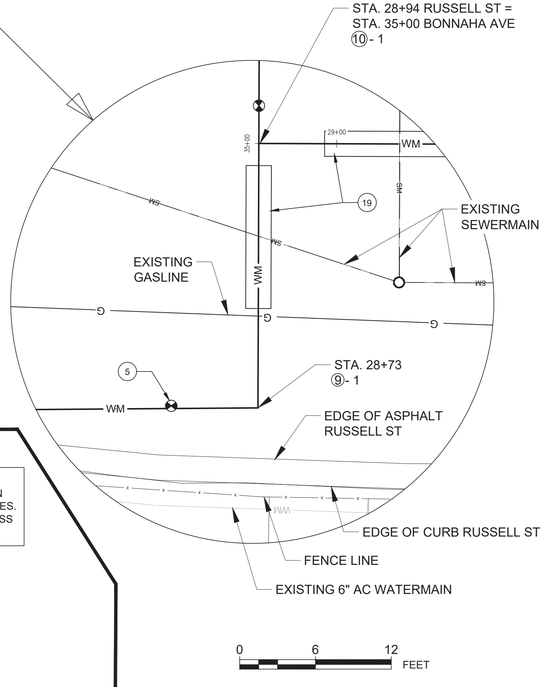
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HORIZONTAL SCALE: 1"=30'
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DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/29/2026 ARIZONA, U.S.A.

JOEL GARCIA -S — Digitally signed by JOEL GARCIA -S Date: 2026.10.29 10:45:28 -07'00'

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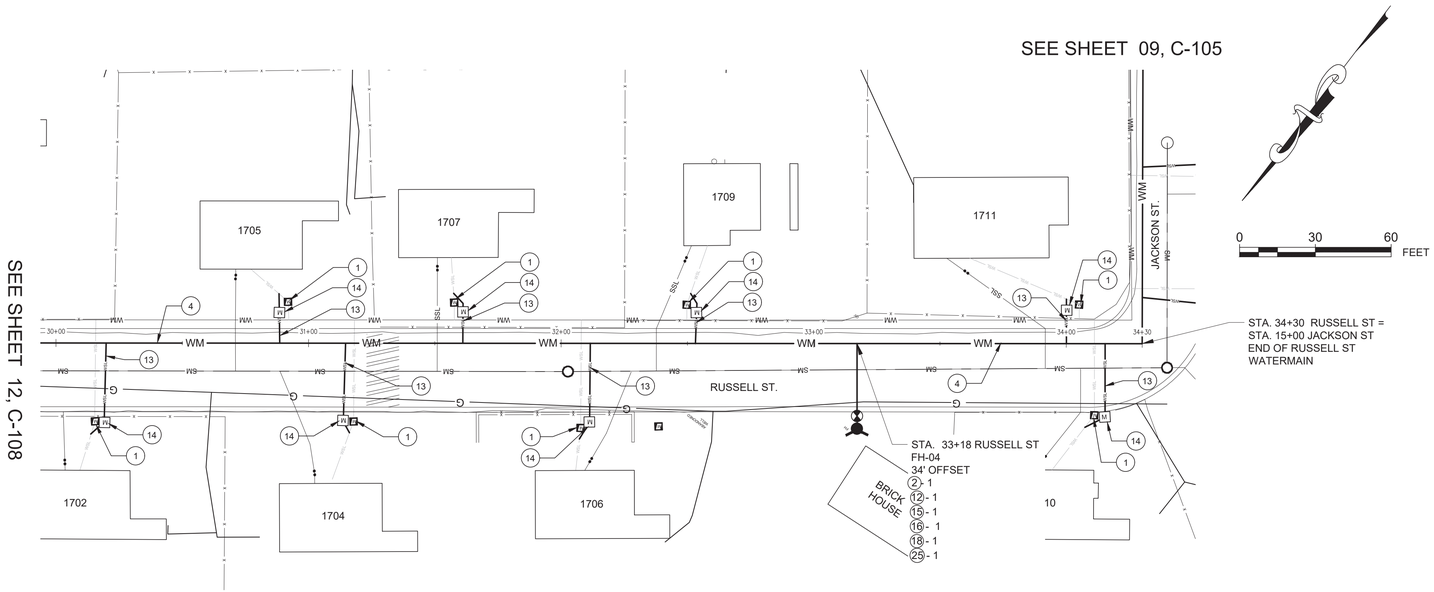
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 26+10 - STA. 30+00 RUSSELL ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S.	DATE: 09-2026	FILE NAME: V24-PPF-30-2025	
CHECKED BY: D.A.	DATE: 10-2026	WA NUMBER: 11-19	
APPROVED BY: D.A.	DATE: 10-2026	PROJ ENG: JOEL GRACIA	

C-108
SHEET 12 OF 24

STA. 30+00 - STA. 34+30 RUSSELL ST.



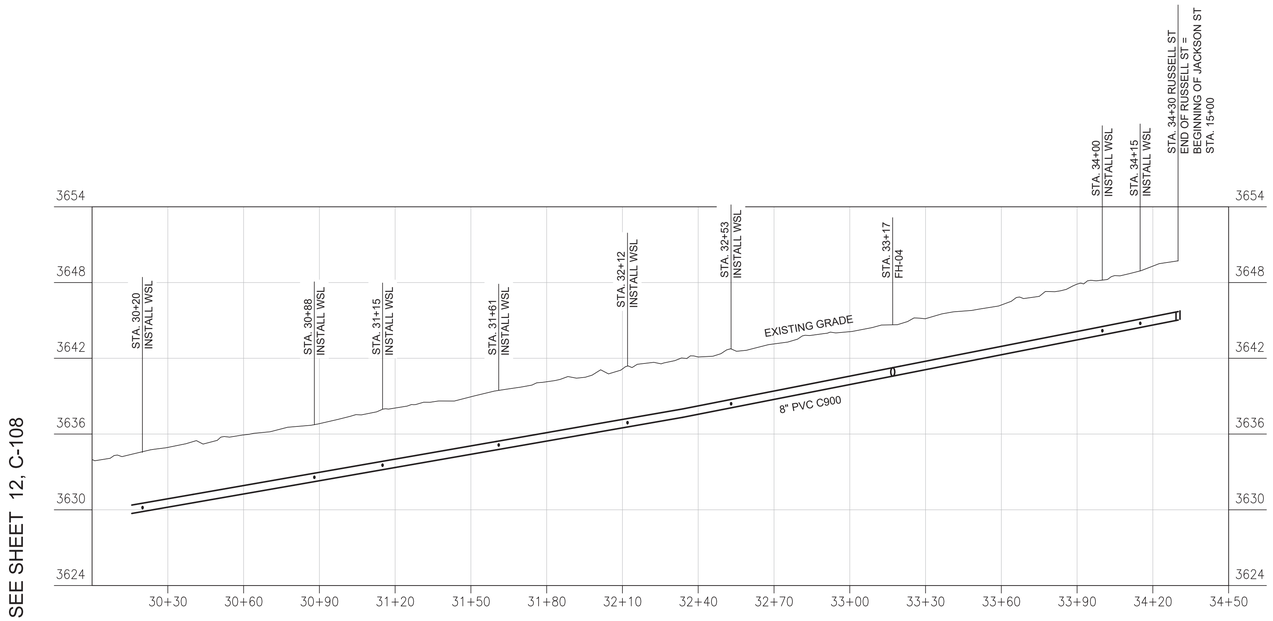
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1. ALL DISTURBED PAVED AREAS OR CURBS SHALL BE SAW CUT TO THE MINIMUM DIMENSIONS ALLOWED ON THE DETAILS TO INSTALL THE WATERMAIN, WATER SERVICE CONNECTIONS AND RELATED APPURTENANCES. NO ADDITIONAL PAYMENT WILL MADE FOR ASPHALT REPAIR BEYOND THE MINIMUM SAW CUT DIMENSIONS ALLOWED ON THE RESURFACING DETAIL ON SHEET 23, DETAIL 200-2. CONCRETE CURB AND GUTTER SHALL NOT BE DISTURBED UNLESS REQUIRED TO MEET MINIMUM WIDTH REQUIREMENT.
2. CONTRACTOR TO RESTORE ALL FENCES BACK TO THEIR ORIGINAL CONDITION OR BETTER.
3. ALL AREAS WHERE ITEMS ARE IDENTIFIED FOR REMOVAL OR ABANDONMENT SHALL BE PROPERLY BACKFILLED, COMPACTED AND NEATLY GRADED TO MATCH EXISTING SURROUNDINGS.
4. CONTRACTORS MUST VERIFY ALL FIELD DIMENSIONS, ELEVATIONS AND EXISTING SITE CONDITIONS-INCLUDING UTILITIES-BEFORE STARTING WORK OR ORDERING MATERIALS.



NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
ARIZONA, U.S.A.
Date Signed 10/29/2026

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:46:00 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

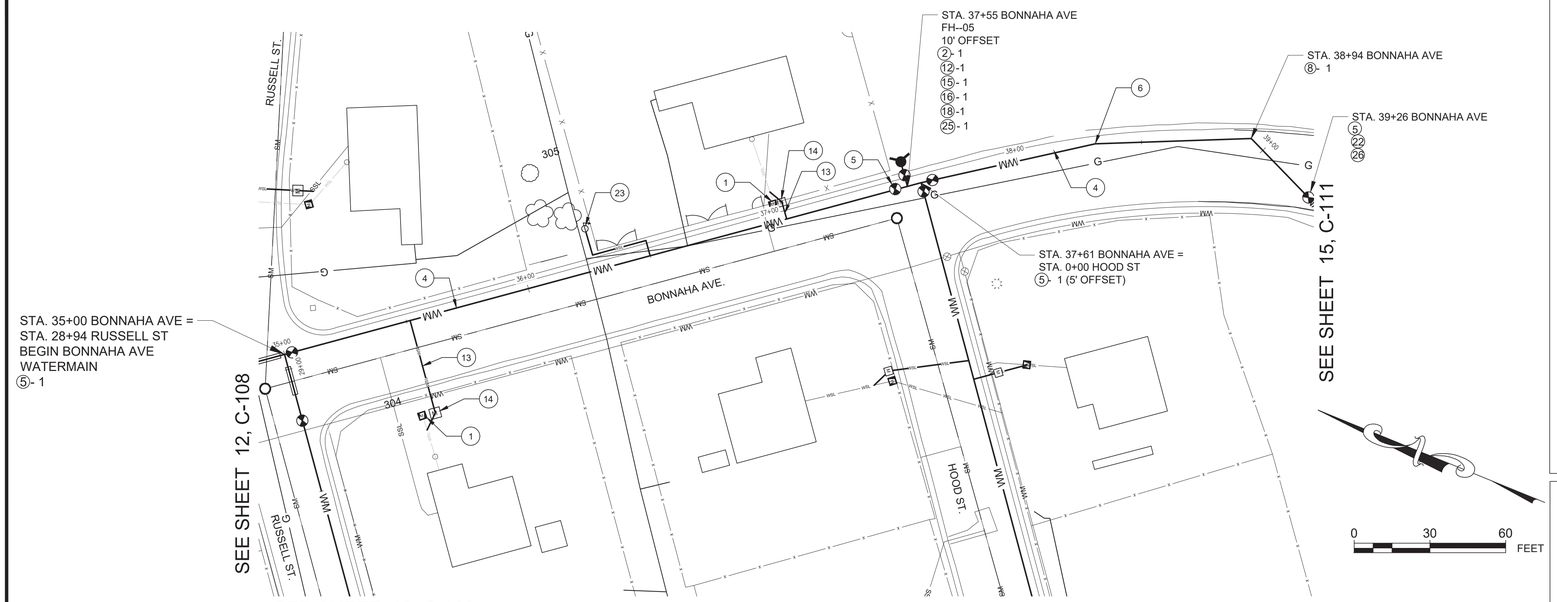
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 30+00 - STA. 34+30 RUSSELL ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S.	DATE: 09-2026
CHECKED BY: D.A.	DATE: 10-2026
APPROVED BY: D.A.	DATE: 10-2026
FILE NAME: V24-PPF-30-2025	
WA NUMBER: 11-19	
PROJ ENG: JOEL GRACIA	

C-109
SHEET 13 OF 24

STA. 35+00 - STA. 39+30 BONNAHA AVE.



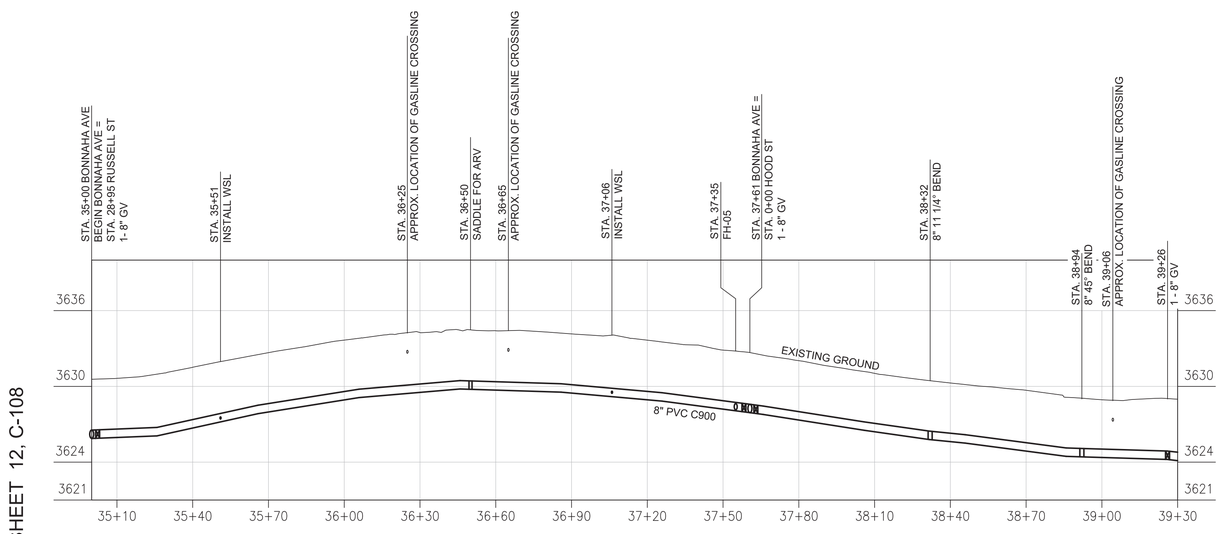
CONSTRUCTION NOTES

(*NOTES WITH STRIKE-THROUGH DO NOT APPLY TO THIS SHEET)

1. REMOVE EXISTING WATER METER ASSEMBLY, CONNECT TO EXISTING SERVICE LINE TO EXISTING LINE, AND BACKFILL
2. REMOVE EXISTING FIRE HYDRANT TO A MINIMUM DEPTH OF 2' BELOW GRADE AND GATE VALVE AND COVER
3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
4. INSTALL 8" WATERMAIN, PVC C900 DR18 PER PAO TP-04.03B
5. INSTALL 8" GATE VALVE PER, SHEET 24, DETAIL 4B
6. INSTALL 8" 11 1/4° PER, SHEET 21, DETAIL 4A
7. ~~INSTALL 8" 22 1/2° BEND PER, SHEET 21, DETAIL 4A~~
8. INSTALL 8" 45° BEND PER, SHEET 21, DETAIL 4A
9. ~~INSTALL 8" 90° BEND PER, SHEET 21, DETAIL 4A~~
10. ~~INSTALL 8"x8"x8" TEE PER, SHEET 21, DETAIL 4A~~
11. ~~INSTALL 8"x4"x8" TEE PER, SHEET 21, DETAIL 4A~~
12. INSTALL 8"x8"x6" TEE PER, SHEET 21, DETAIL 4A
13. INSTALL 1" P.E. SERVICE LINE PER, SHEET 20, DETAIL 5A
14. INSTALL WATER METER ASSEMBLY PER, SHEET 20, DETAIL 5A
15. INSTALL 6" D.I. AWWA C150/C151 PIPE PER, SHEET 19, DETAIL 4C, PER PAO TP-04.03B
16. INSTALL FIRE HYDRANT AND GATE VALVE PER, SHEET 19, DETAIL 4C
17. ~~INSTALL 3 BOLLARDS PER, SHEET 23, DETAIL 1C~~
18. INSTALL 8"x6" REDUCER MJxMJ
19. ~~INSTALL EXTRA PROTECTION D.I.P. PER, SHEET 19, DETAIL 404-2, PAO TP-04.03B2~~
20. ~~INSTALL 2" PE 4710 WATER SERVICE LINE PER, PAO TP-05.03A~~
21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
22. SEE SHEET 22, HDPE WASH CROSSING
23. INSTALL COMBINATION AIR RELEASE/VACUUM VALVE PER, SHEET 20, DETAIL 4F-1
24. ~~INSTALL END CAP ON EXISTING WATERMAIN~~
25. INSTALL 6" GATE VALVE PER, SHEET 24, DETAIL 4B
26. INSTALL PVC TO HDPE CONNECTION PER, SHEET 22, HDPE WASH CROSSING DETAIL
27. ~~INSTALL HDPE JOINT AND ANCHOR BLOCK PER, SHEET 22, HDPE WASH CROSSING DETAIL~~

GENERAL NOTE:

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INDIAN HEALTH SERVICE 1955

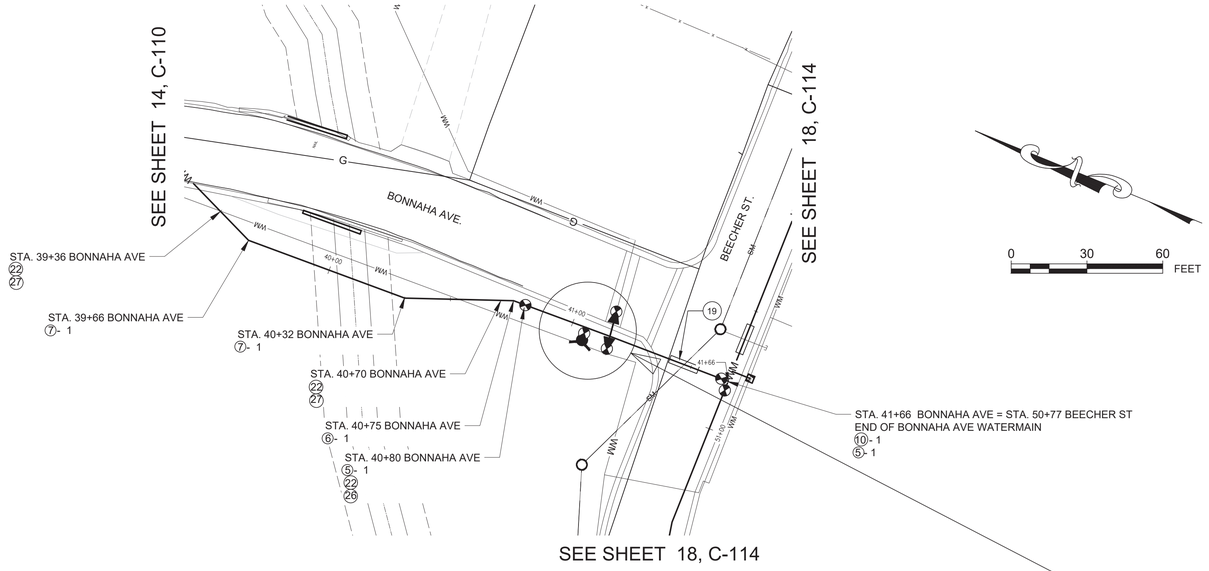
CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 35+00 - STA. 39+30 BONNAHA AVE.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
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FILE NAME: V24-PPF-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-110
SHEET 14 OF 24

STA. 39+30 - STA. 41+66 BONNAHA AVE.



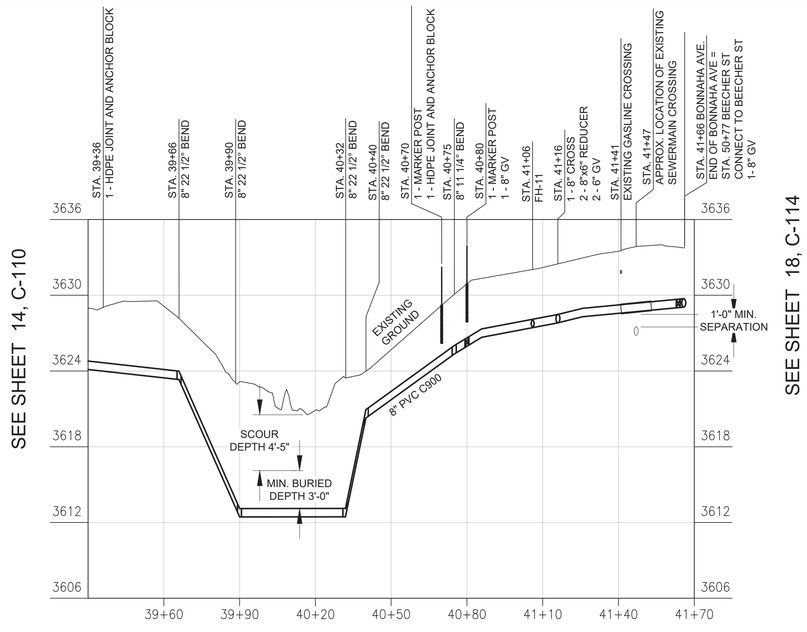
CONSTRUCTION NOTES

(*NOTES WITH STRIKE-THROUGH DO NOT APPLY TO THIS SHEET)

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2. REMOVE EXISTING FIRE HYDRANT TO A MINIMUM DEPTH OF 2' BELOW GRADE AND GATE VALVE AND COVER
3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
4. ~~INSTALL 8" WATERMAIN, PVC C900 DR18 PER PAO TP-04.03B~~
5. INSTALL 8" GATE VALVE PER, SHEET 24, DETAIL 4B
6. INSTALL 8" 11 1/4° PER, SHEET 21, DETAIL 4A
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13. ~~INSTALL 1" P.E. SERVICE LINE PER, SHEET 20, DETAIL 5A~~
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21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
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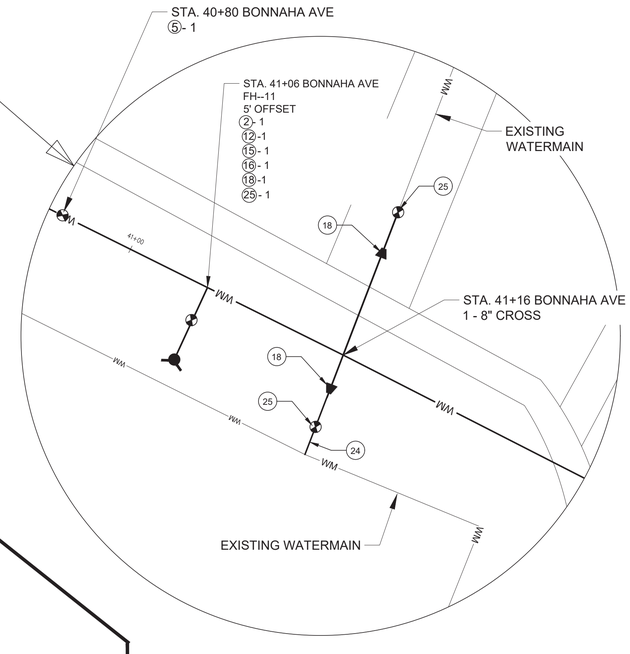
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INDIAN HEALTH SERVICE
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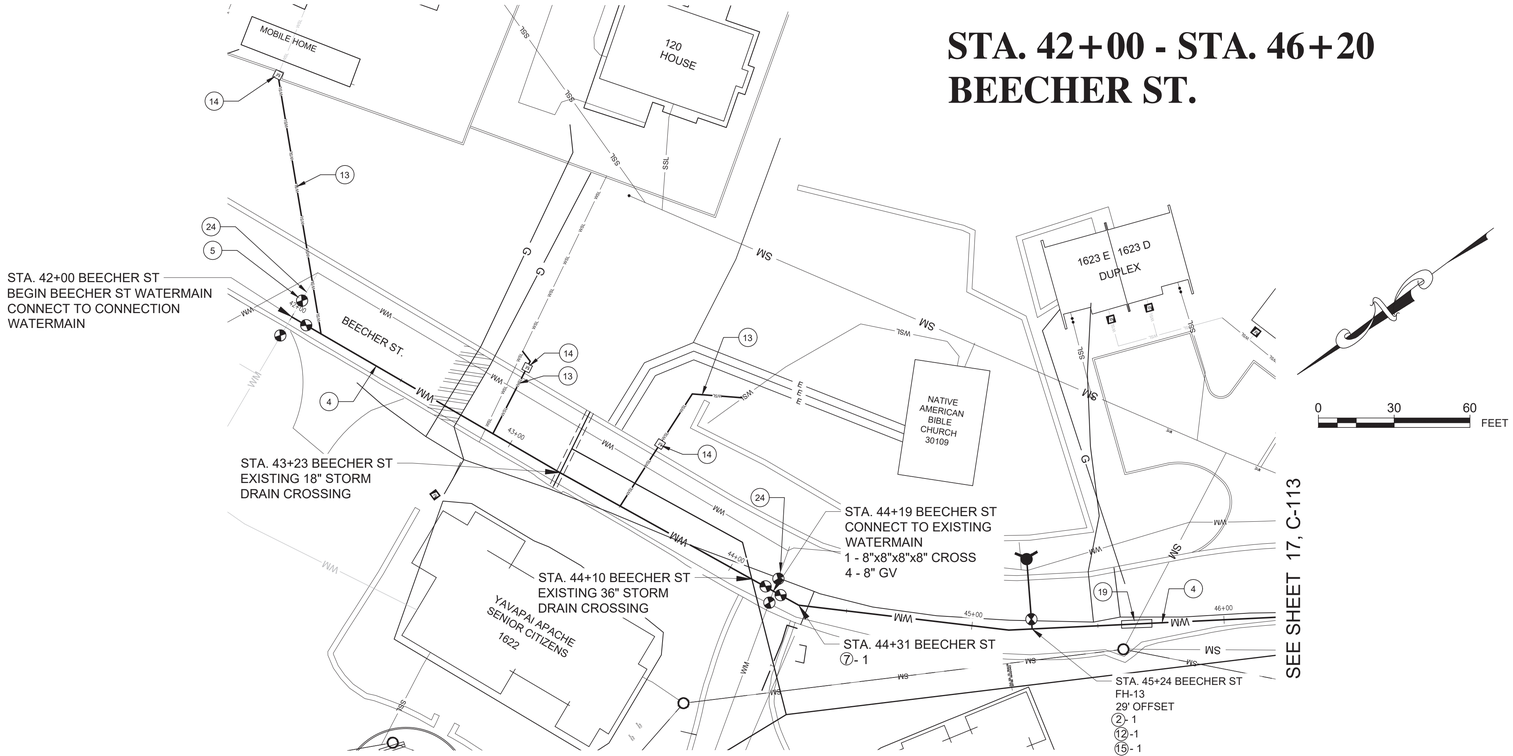
WESTERN ARIZONA DISTRICT OFFICE
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FILE NAME: V24-PFP-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-111
SHEET 15 OF 24

STA. 42+00 - STA. 46+20
BEECHER ST.



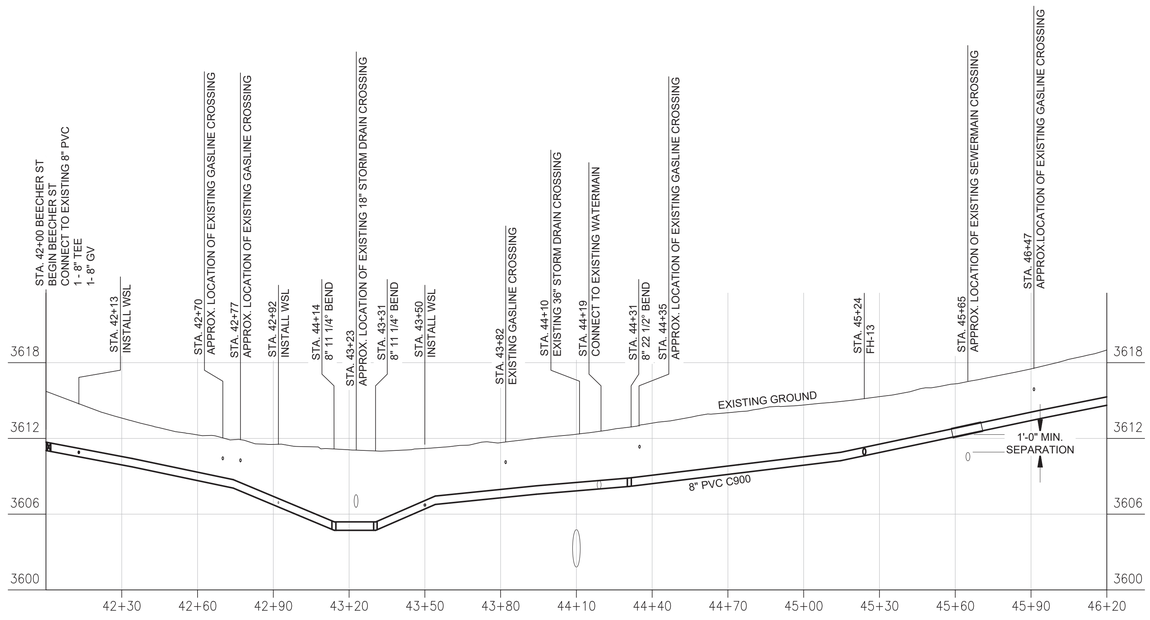
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21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
22. ~~SEE SHEET 22, HDPE WASH CROSSING~~
23. ~~INSTALL COMBINATION AIR RELEASE/VACUUM VALVE PER, SHEET 20, DETAIL 4F-1~~
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SEE SHEET 17, C-113

NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

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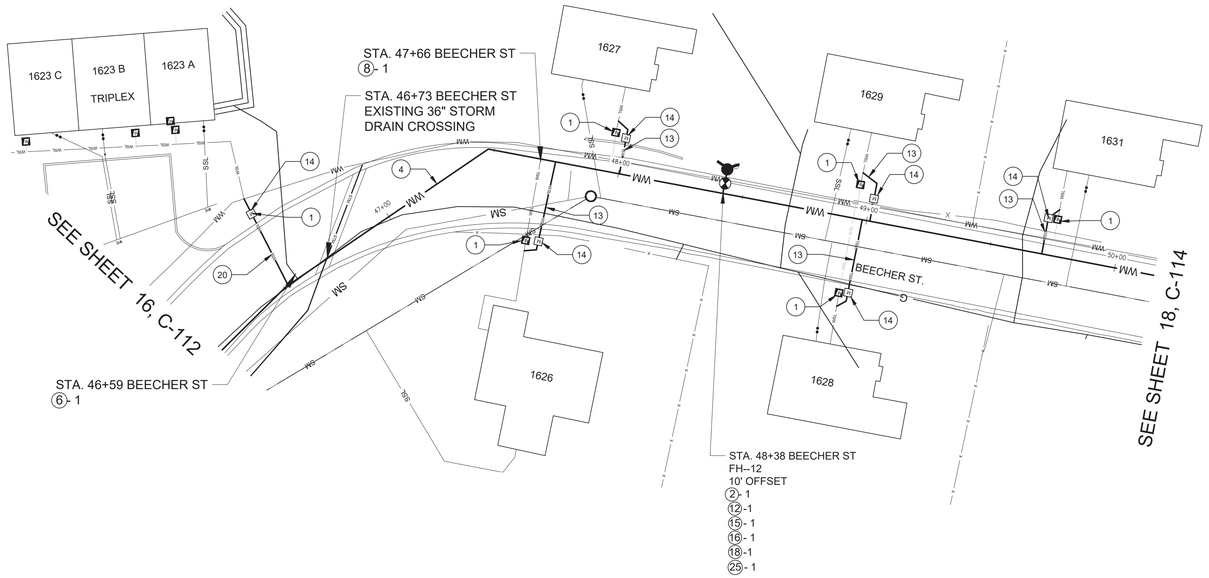
INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
STA. 42+00 STA. 46+20 BEECHER ST.
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
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APPROVED BY: D.A. DATE: 10-2026
FILE NAME: V24-PPP-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-112
SHEET 16 OF 24

STA. 46+20 - STA. 50+10 BEECHER ST.



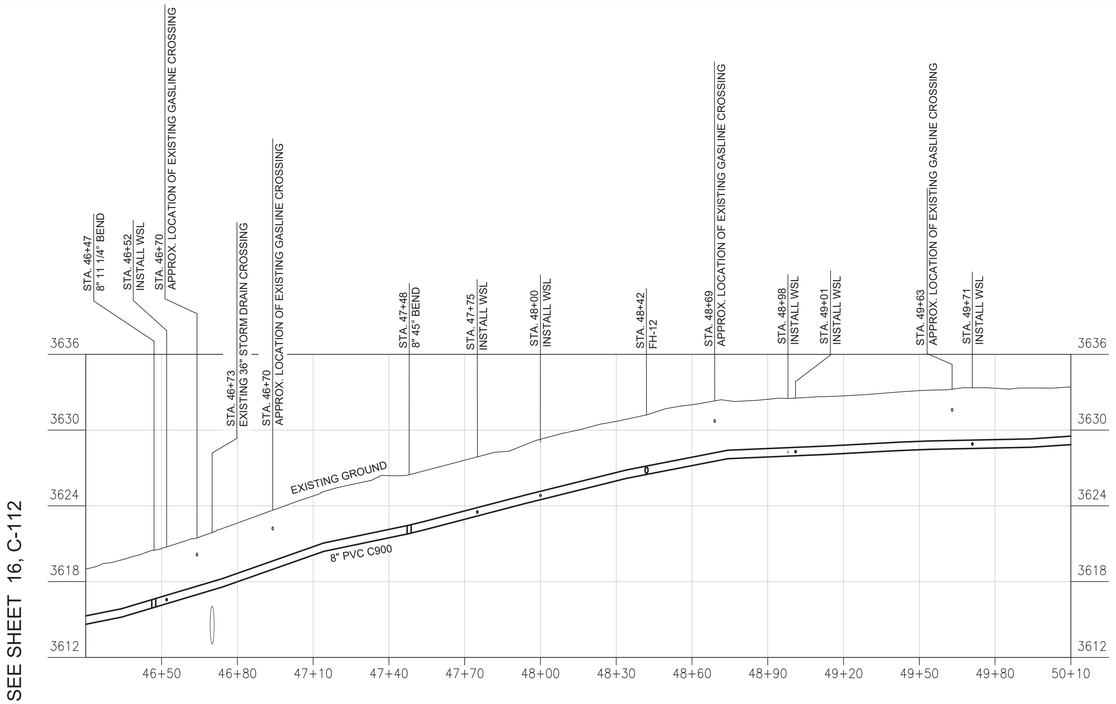
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SEE SHEET 16, C-112

SEE SHEET 18, C-114

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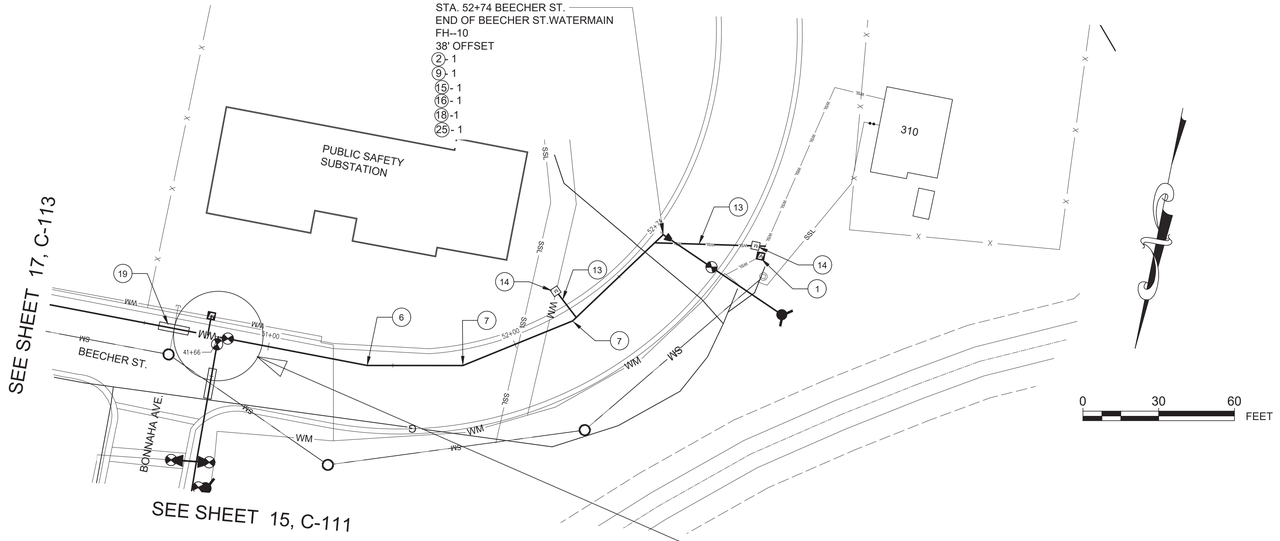
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C-113
SHEET 17 OF 24

STA. 50+10 - STA. 52+74 BEECHER ST.



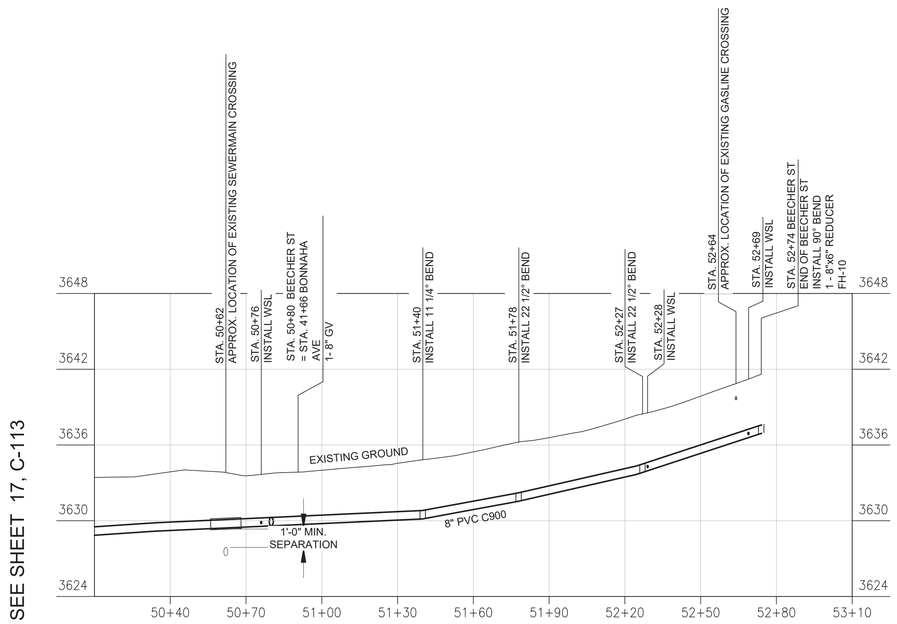
CONSTRUCTION NOTES

(*NOTES WITH STRIKE-THROUGH DO NOT APPLY TO THIS SHEET)

1. REMOVE EXISTING WATER METER ASSEMBLY, CONNECT TO EXISTING SERVICE LINE TO EXISTING LINE, AND BACKFILL
2. REMOVE EXISTING FIRE HYDRANT TO A MINIMUM DEPTH OF 2' BELOW GRADE AND GATE VALVE AND COVER
3. ~~REMOVE EXISTING GATE VALVE AND BACKFILL/GRADE~~
4. INSTALL 8" WATERMAIN, PVC C900 DR18 PER PAO TP-04,03B
5. INSTALL 8" GATE VALVE PER, SHEET 24, DETAIL 4B
6. INSTALL 8" 11 1/4° PER, SHEET 21, DETAIL 4A
7. INSTALL 8" 22 1/2° BEND PER, SHEET 21, DETAIL 4A
8. ~~INSTALL 8" 45° BEND PER, SHEET 21, DETAIL 4A~~
9. INSTALL 8" 90° BEND PER, SHEET 21, DETAIL 4A
10. ~~INSTALL 8"x8"x8" TEE PER, SHEET 21, DETAIL 4A~~
11. ~~INSTALL 8"x4"x8" TEE PER, SHEET 21, DETAIL 4A~~
12. ~~INSTALL 8"x8"x6" TEE PER, SHEET 21, DETAIL 4A~~
13. INSTALL 1" P.E. SERVICE LINE PER, SHEET 20, DETAIL 5A
14. INSTALL WATER METER ASSEMBLY PER, SHEET 20, DETAIL 5A
15. INSTALL 6" D.I. AWWA C150/C151 PIPE PER, SHEET 19, DETAIL 4C, PER PAO TP-04.03B
16. INSTALL FIRE HYDRANT AND GATE VALVE PER, SHEET 19, DETAIL 4C
17. ~~INSTALL 3 BOLLARDS PER, SHEET 23, DETAIL 1C~~
18. INSTALL 8"x6" REDUCER MJxMJ
19. INSTALL EXTRA PROTECTION D.I.P. PER, SHEET 19, DETAIL 404-2, PAO TP-04.03B2
20. ~~INSTALL 2" PE 4710 WATER SERVICE LINE PER, PAO TP-05.03A~~
21. ~~INSTALL 2" CURB STOP AND BOX PER PAO TP-05.03F~~
22. ~~SEE SHEET 22, HDPE WASH CROSSING~~
23. ~~INSTALL COMBINATION AIR RELEASE/VACUUM VALVE PER, SHEET 20, DETAIL 4F-1~~
24. ~~INSTALL END CAP ON EXISTING WATERMAIN~~
25. INSTALL 6" GATE VALVE PER, SHEET 24, DETAIL 4B
26. ~~INSTALL PVC TO HDPE CONNECTION PER, SHEET 22, HDPE WASH CROSSING DETAIL~~
27. ~~INSTALL HDPE JOINT AND ANCHOR BLOCK PER, SHEET 22, HDPE WASH CROSSING DETAIL~~

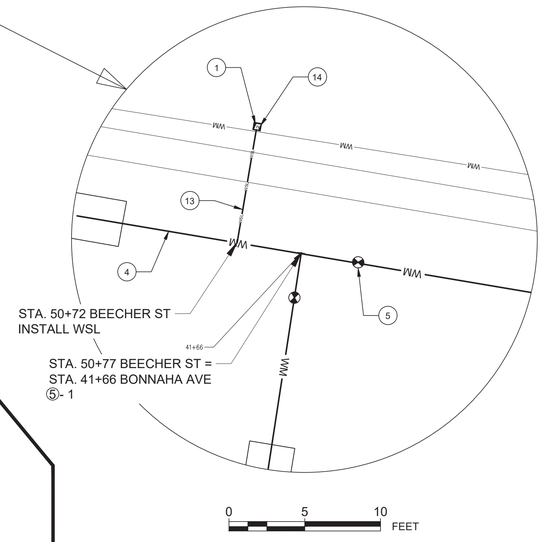
GENERAL NOTE:

1. ALL DISTURBED PAVED AREAS OR CURBS SHALL BE SAW CUT TO THE MINIMUM DIMENSIONS ALLOWED ON THE DETAILS TO INSTALL THE WATERMAIN, WATER SERVICE CONNECTIONS AND RELATED APPURTENANCES. NO ADDITIONAL PAYMENT WILL MADE FOR ASPHALT REPAIR BEYOND THE MINIMUM SAW CUT DIMENSIONS ALLOWED ON THE RESURFACING DETAIL ON SHEET 23, DETAIL 200-2. CONCRETE CURB AND GUTTER SHALL NOT BE DISTURBED UNLESS REQUIRED TO MEET MINIMUM WIDTH REQUIREMENT.
2. CONTRACTOR TO RESTORE ALL FENCES BACK TO THEIR ORIGINAL CONDITION OR BETTER.
3. ALL AREAS WHERE ITEMS ARE IDENTIFIED FOR REMOVAL OR ABANDONMENT SHALL BE PROPERLY BACKFILLED, COMPACTED AND NEATLY GRADED TO MATCH EXISTING SURROUNDINGS.
4. CONTRACTORS MUST VERIFY ALL FIELD DIMENSIONS, ELEVATIONS AND EXISTING SITE CONDITIONS-INCLUDING UTILITIES-BEFORE STARTING WORK OR ORDERING MATERIALS.



NOTE:
BURY DEPTH SHALL BE A MIN. OF 4' OR GREATER AS SHOWN BY THE PROFILE TO MEET REQUIRED SEPARATION DISTANCES. THERE SHALL BE NO HIGH POINT ON THE WATERMAIN UNLESS SHOWN WITH AN AIR RELEASE VALVE (ARV).

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'



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Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/29/2025 ARIZONA, U.S.A.

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2025.10.29 10:49:34 -07'00'

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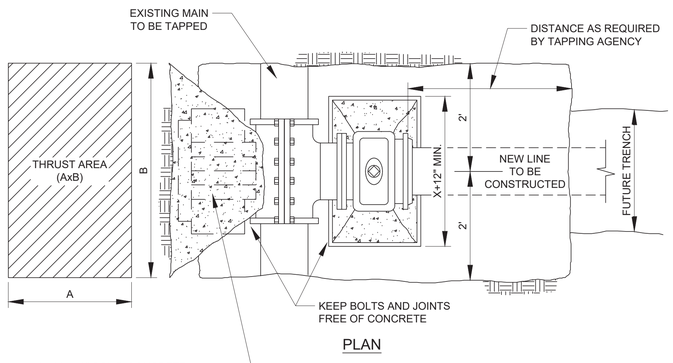
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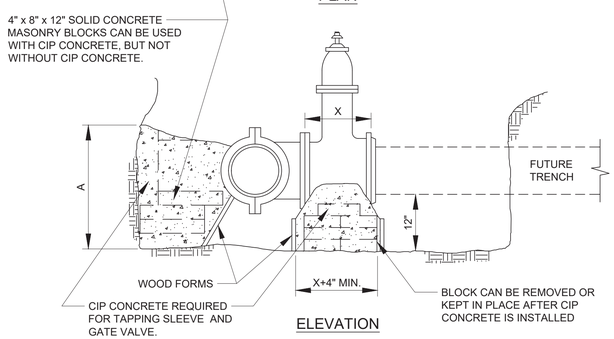
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PH 18-Y24 & 20-V75

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FILE NAME: Y24-PPP-30-2025
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-114
SHEET 18 OF 24



PLAN



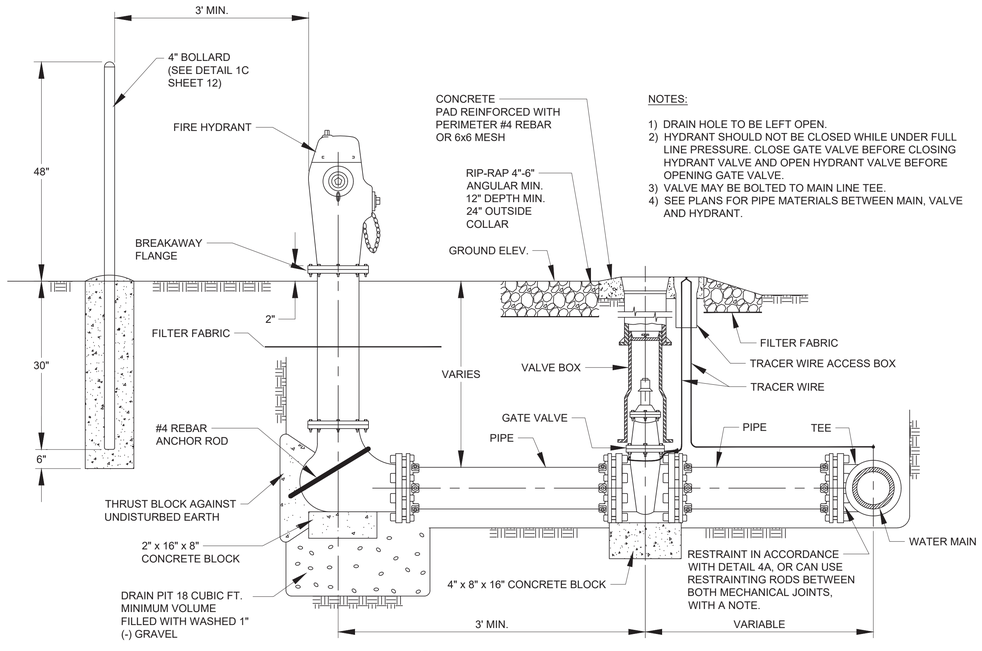
ELEVATION

NOTES:

1) TAPPING SLEEVE TO BE PLACED A MINIMUM OF 18" FROM ANY BELL COUPLING, VALVE, FITTING OR OTHER OBSTRUCTION.
2) CONTRACTOR SHALL EXCAVATE AS SHOWN AND SHALL SET TAPPING SLEEVE AND VALVE AND TIGHTEN ALL BOLTS PRIOR TO THE PRESSURE TEST.
3) ALL TAPPING SLEEVES AND VALVES MUST BE PRESSURE TESTED PRIOR TO BLOCKING OR TAPPING. THE TEST MUST BE WITNESSED AND APPROVED BY THE INSPECTOR.
4) BLOCKS ARE TO EXTEND TO UNDISTURBED GROUND AND BE INSTALLED BEFORE THE TAP IS MADE. ALL FLANGE BOLTS SHALL BE FREE AND CLEAR OF CONCRETE.
5) THIS DETAIL COVERS TAPPING SLEEVES 4" THROUGH 16" IN SIZE ON DUCTILE IRON, CAST IRON AND ASBESTOS CEMENT PIPE. ANY OTHER SIZE OR TYPE OF PIPE WILL REQUIRE A SEPARATE SUBMITTAL AND APPROVAL BY THE ENGINEER.

SIZE OF PIPE BEING CONNECTED	MINIMUM THRUST AREA REQUIRED EQUALS (AxB) (SQUARE FEET)
4" AND LESS	3
6"	4
8"	6
10"	9
12"	13
16"	23

4F **TAPPING SLEEVE AND VALVE**
Scale: N.T.S.



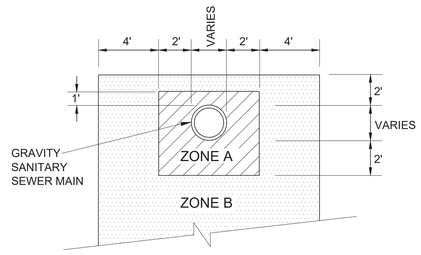
NOTES:

1) DRAIN HOLE TO BE LEFT OPEN.
2) HYDRANT SHOULD NOT BE CLOSED WHILE UNDER FULL LINE PRESSURE. CLOSE GATE VALVE BEFORE CLOSING HYDRANT VALVE AND OPEN HYDRANT VALVE BEFORE OPENING GATE VALVE.
3) VALVE MAY BE BOLTED TO MAIN LINE TEE.
4) SEE PLANS FOR PIPE MATERIALS BETWEEN MAIN, VALVE AND HYDRANT.

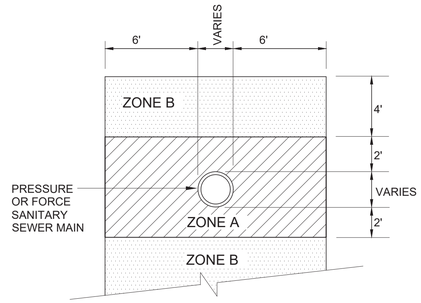
4C **FIRE HYDRANT WITH GATE VALVE**
Scale: N.T.S.

WATER LINE EXCLUSION AND EXTRA PROTECTION ZONES*

GRAVITY SANITARY SEWER



PRESSURIZED SANITARY SEWER

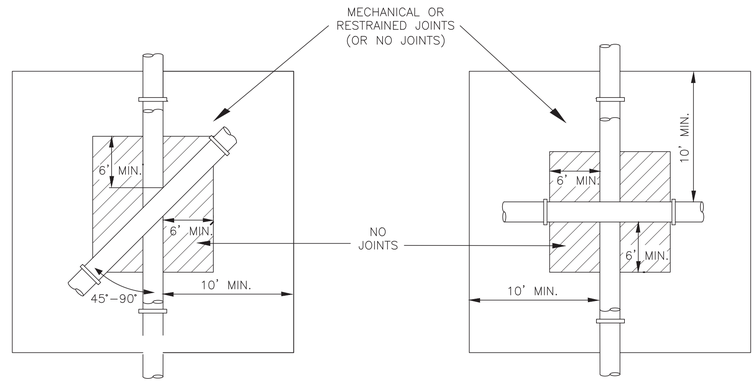


NOTES:

ZONE A: NO WATER LINES ALLOWED/MINIMUM SEPARATION.
ZONE B: EXTRA PROTECTION REQUIRED FOR WATER LINES.
* REFER TO SECTION 610, WATER LINE CONSTRUCTION.

DETAIL NO.	STANDARD DETAIL	WATER AND SANITARY SEWER SEPARATION/PROTECTION	REVISED	DETAIL NO.
404-1	MARICOPA ASSOCIATION of GOVERNMENTS ENGLISH		01-01-2020	404-1

WATER LINE EXTRA PROTECTION
DUCTILE IRON PIPE WITH RESTRAINED OR MECHANICAL JOINTS*



EXTRA PROTECTION DUCTILE IRON PIPE
(GRAVITY OR PRESSURIZED) SEWER LINE

NOTES:

* REFER TO MAG STANDARD SPECIFICATION SECTION 610.

DETAIL NO.	STANDARD DETAIL	WATER AND SANITARY SEWER SEPARATION/PROTECTION	REVISED	DETAIL NO.
404-2	MARICOPA ASSOCIATION of GOVERNMENTS ENGLISH		01-01-2006	404-2

DATE | REVISIONS | INIT.

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JOEL GARCIA -S Digitally signed by JOEL GARCIA -S Date: 2026.10.29 10:50:12 -07'00'

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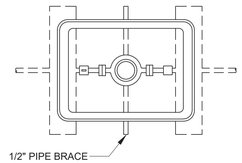
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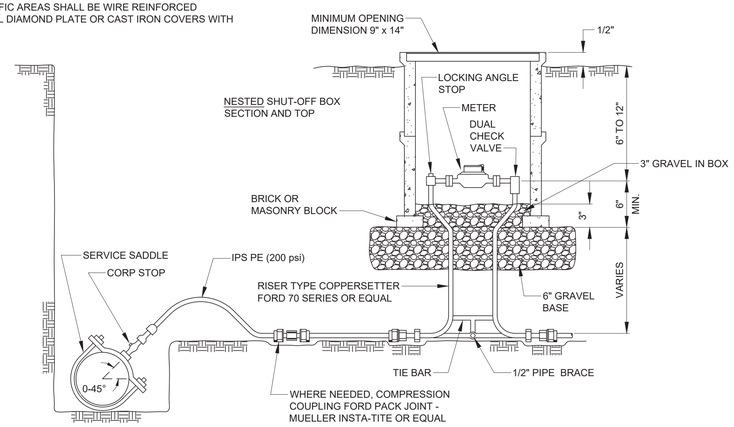
C-501
SHEET 19 OF 24

NOTES:

1) MINIMUM HORIZONTAL DISTANCE BETWEEN WATER SERVICE LINE & SEWER SERVICE LINES SHALL BE 10 FEET.
2) WATER SERVICE LINE BURY SHALL BE A MINIMUM OF 36 INCHES.
3) POLYETHYLENE (PE) PIPE SHALL BE 1 INCH FOR SERVICE LINES LESS THAN 200 FEET & 1-1/2 INCHES FOR SERVICE LINES OVER 200 FEET AND LESS THAN 300 FEET.
4) WATER SERVICE LINES SHALL NOT EXTEND BEYOND 300 FEET. IF NEEDED, 2 INCH PE. LATERALS SHALL BE INSTALLED TO EXTEND WATER SERVICE TO INDIVIDUAL HOMES.
5) WATER METER BOX SHALL BE LOCATED AS DIRECTED BY OWNER.
6) WHERE APPLICABLE, EXISTING WATER SERVICE LINES SHALL BE CONNECTED TO NEW WATER MAIN LINES USING A NEW SERVICE SADDLE AND CORPORATION STOP.
7) TRACER WIRE AND WARNING TAPE SHALL BE INSTALLED ON ALL WATER SERVICE LINES FROM THE MAIN TO THE BUILDING.
8) ALL THREADED FITTINGS (CORPORATION STOP, PE CONNECTORS) FOR PE PIPE ARE TO BE IPS THREADS. OTHER THREADS NOT ALLOWED.
9) OUTLET TO COPPER SETTER SHALL HAVE A DUAL CHECK VALVE.
10) METER BOXES IN TRAFFIC AREAS SHALL BE WIRE REINFORCED CONCRETE WITH STEEL DIAMOND PLATE OR CAST IRON COVERS WITH INTERLOCK SECTIONS.



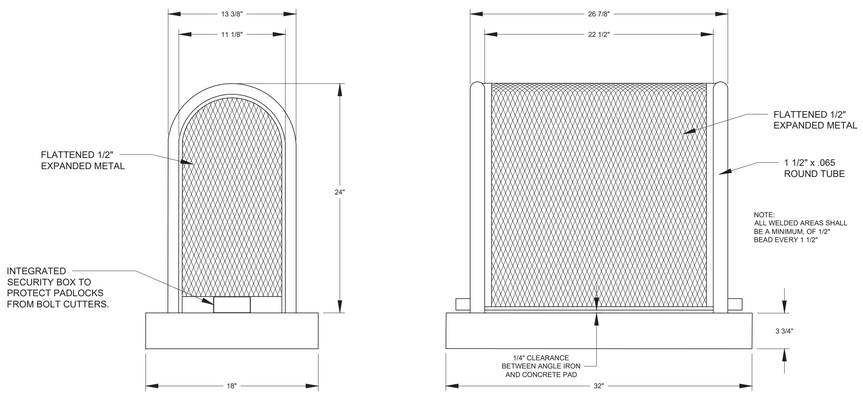
TOP VIEW



SECTION VIEW

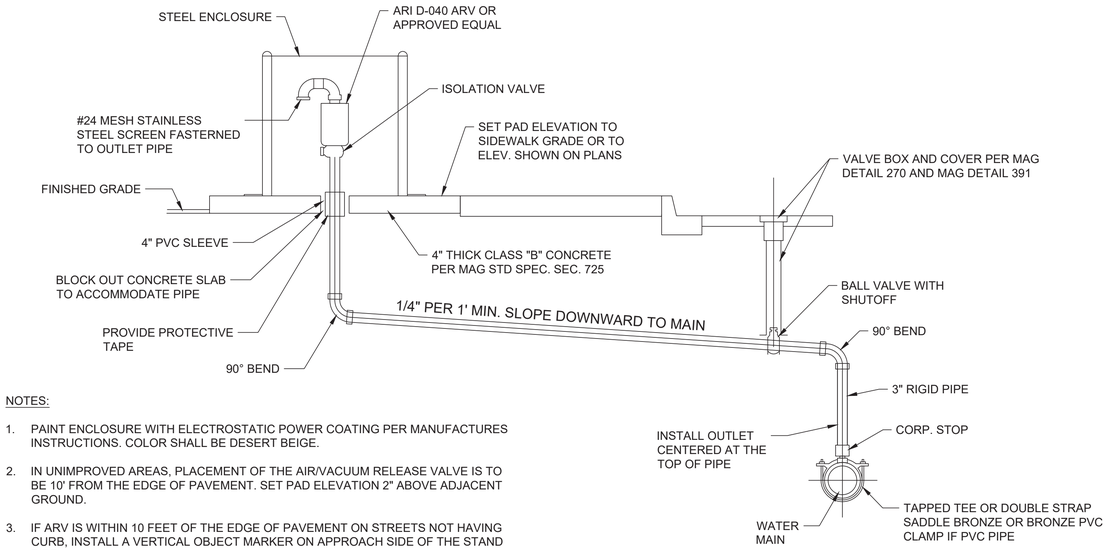
5A WATER SERVICE LINE CONNECTION

Scale: NTS



OUTLET PIPE STEEL CAGE

Scale: NTS



NOTES:

1. PAINT ENCLOSURE WITH ELECTROSTATIC POWER COATING PER MANUFACTURES INSTRUCTIONS. COLOR SHALL BE DESERT BEIGE.
2. IN UNIMPROVED AREAS, PLACEMENT OF THE AIR/VACUUM RELEASE VALVE IS TO BE 10' FROM THE EDGE OF PAVEMENT. SET PAD ELEVATION 2" ABOVE ADJACENT GROUND.
3. IF ARV IS WITHIN 10 FEET OF THE EDGE OF PAVEMENT ON STREETS NOT HAVING CURB, INSTALL A VERTICAL OBJECT MARKER ON APPROACH SIDE OF THE STAND PIPE.
4. TEE AT MAIN HELPS TRAP AIR FOR RELEASE.
5. RIGID PIPELINE FROM MAIN TO ARV TO BE INSTALLED WITH 2% POSITIVE SLOPE WITH RIGID PIPING.
6. DISCHARGE VENT SHOULD NOT BE REDUCED IN SIZE FROM ARV OUTLET.
7. IF LATERAL OFFSET IS MORE THAN 5FT AWAY FROM MAIN, USE ANTI-SLAM OR THROTTLE DEVICE ON ARV TO SOFTEN SURGE.
8. OFFSET PIPING TO BE ONE DIAMETER LARGER THAN ARV TO REDUCE VELOCITY SURGE.

ARV ABOVE GRADE DETAL

N.T.S.

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/29/2026 ARIZONA, U.S.A.

JOEL GARCIA -S

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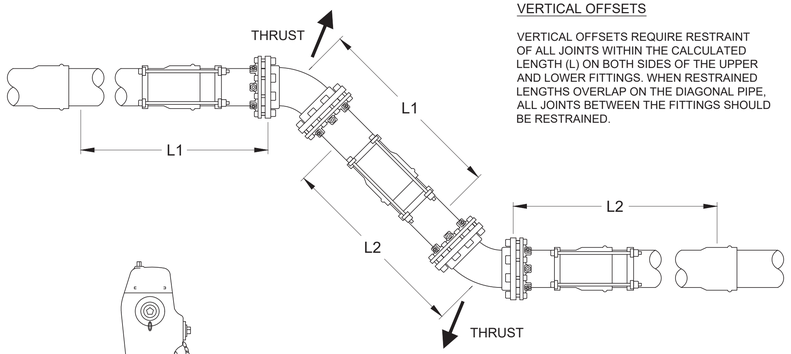
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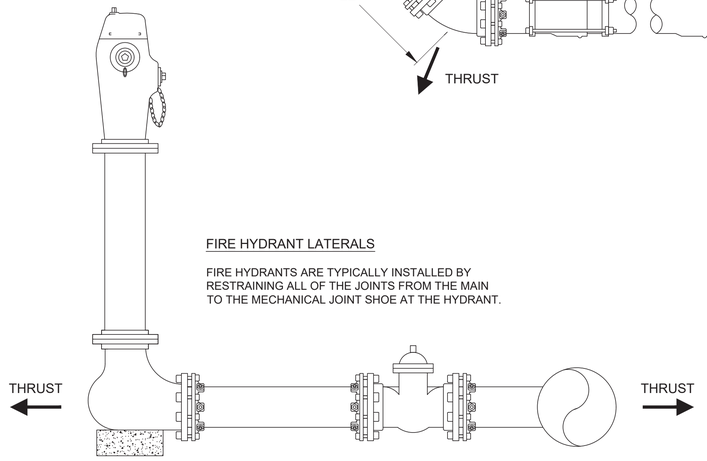
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C-502
SHEET 20 OF 24



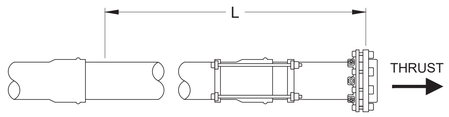
VERTICAL OFFSETS

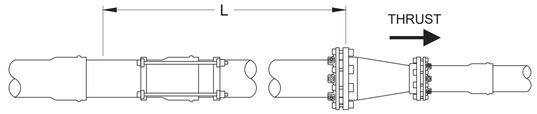
VERTICAL OFFSETS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) ON BOTH SIDES OF THE UPPER AND LOWER FITTINGS. WHEN RESTRAINED LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL JOINTS BETWEEN THE FITTINGS SHOULD BE RESTRAINED.



FIRE HYDRANT LATERALS

FIRE HYDRANTS ARE TYPICALLY INSTALLED BY RESTRAINING ALL OF THE JOINTS FROM THE MAIN TO THE MECHANICAL JOINT SHOE AT THE HYDRANT.





DEAD ENDS (AND IN-LINE VALVES)

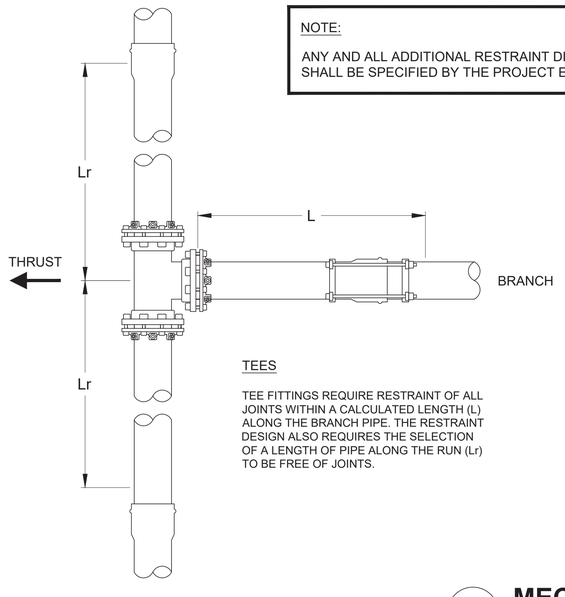
DEAD ENDS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) EXTENDING FROM THE CAP. IN-LINE VALVES REQUIRE RESTRAINT OF ALL JOINTS WITHIN A DISTANCE (L) EXTENDING EITHER SIDE OF THE VALVE.

RESTRAINT LENGTHS FOR PVC PIPE MATERIAL

PIPE SIZE	HORIZONTAL BENDS	L	VERTICAL OFFSETS	L1	L2	TEE	Lr	L	L FOR DEAD ENDS AND VALVES	REDUCERS	L
12"	90°	35'				12 x 12 x 12		17'		12 x 10	29'
	45°	15'	45°	41'	13'	12 x 12 x 10	15.0	1'	99'	12 x 8	52'
	22.5°	7'	22.5°	20'	7'	12 x 12 x 8		1'		12 x 6	72'
	11.25°	4'	11.25°	10'	3'	12 x 12 x 6		1'		12 x 4	86'
10"	90°	30'				10 x 10 x 12		54'		10 x 8	28'
	45°	13'	45°	35'	11'	10 x 10 x 10	10.0	30'	84'	10 x 6	52'
	22.5°	6'	22.5°	17'	6'	10 x 10 x 8		2'		10 x 4	68'
	11.25°	3'	11.25°	9'	3'	10 x 10 x 6		1'		10 x 3	73'
8"	90°	26'				8 x 8 x 10		50'		8 x 6	30'
	45°	11'	45°	29'	10'	8 x 8 x 8	8.0	27'	70'	8 x 4	50'
	22.5°	5'	22.5°	14'	5'	8 x 8 x 6		1'		8 x 3	57'
	11.25°	3'	11.25°	7'	3'	8 x 8 x 4		1'			
6"	90°	20'				6 x 6 x 10		58'		6 x 4	28'
	45°	8'	45°	22'	7'	6 x 6 x 8	8.0	38'	53'	6 x 3	36'
	22.5°	4'	22.5°	11'	4'	6 x 6 x 6		11'			
	11.25°	2'	11.25°	6'	2'	6 x 6 x 4		1'			
4"	90°	14'				4 x 4 x 6		25'		4 x 3	13'
	45°	6'	45°	16'	5'	4 x 4 x 4	8.0	1'	38'		
	22.5°	3'	22.5°	8'	3'	4 x 4 x 3		1'			
	11.25°	2'	11.25°	4'	2'						

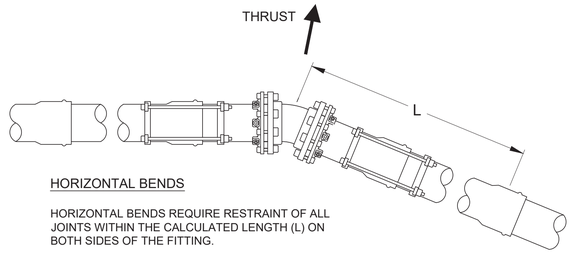
NOTE:

ANY AND ALL ADDITIONAL RESTRAINT DISTANCES (L, L1, L2, Lr) SHALL BE SPECIFIED BY THE PROJECT ENGINEER.



TEES

TEE FITTINGS REQUIRE RESTRAINT OF ALL JOINTS WITHIN A CALCULATED LENGTH (L) ALONG THE BRANCH PIPE. THE RESTRAINT DESIGN ALSO REQUIRES THE SELECTION OF A LENGTH OF PIPE ALONG THE RUN (Lr) TO BE FREE OF JOINTS.



HORIZONTAL BENDS

HORIZONTAL BENDS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE CALCULATED LENGTH (L) ON BOTH SIDES OF THE FITTING.

RESTRAINED MECHANICAL PIPE JOINT APPLICATION CRITERIA

NOTES:

ALL ABOVE REFERENCED RESTRAINT LENGTHS, "L", SHALL BE CONSIDERED AS MINIMUM VALUES. ALL CALCULATED LENGTHS ARE BASED ON THE EBAA RESTRAINT LENGTH CALCULATOR AND ASSUME THE FOLLOWING:

1) SOIL TYPE IS SIMILAR TO GP (PER USCS), A POORLY GRADED GRAVEL-SAND MIXTURE WITH LITTLE OR NO FINES.
2) THE TEST PRESSURE IS 150 PSI.
3) THE FACTOR OF SAFETY IS 1.5 TO 1.
4) THE MINIMUM DEPTH OF BURY IS 3.0'.
5) THE PIPE IS PLACED IN A COMPACTED GRANULAR MATERIAL UP TO THE CENTERLINE OF THE PIPE, AND WITH A MINIMUM OF 4" BEDDING UNDER THE PIPE, AND COMPACTED SELECT MATERIAL UP TO THE TOP OF THE PIPE. ALL BEDDING AND COVER MATERIAL IS TO BE BACKFILLED AND COMPACTED IN ACCORDANCE TO TP 01.
6) TRENCH TYPE IS TYPE 4.
7) FOR VERTICAL OFFSETS, THE LOW SIDE DEPTH USED WAS 3.5 FT.
8) FOR ANY DIFFERENT VALUES OR CRITERIA, CONSULT WITH ENGINEER TO RECALCULATE REQUIRED RESTRAINT LENGTH.

4A **MECHANICAL RESTRAINED JOINTS**

Scale: NTS

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JOEL GARCIA -S Digitally signed by JOEL GARCIA -S Date: 2025.10.29 10:51:25 -07'00'

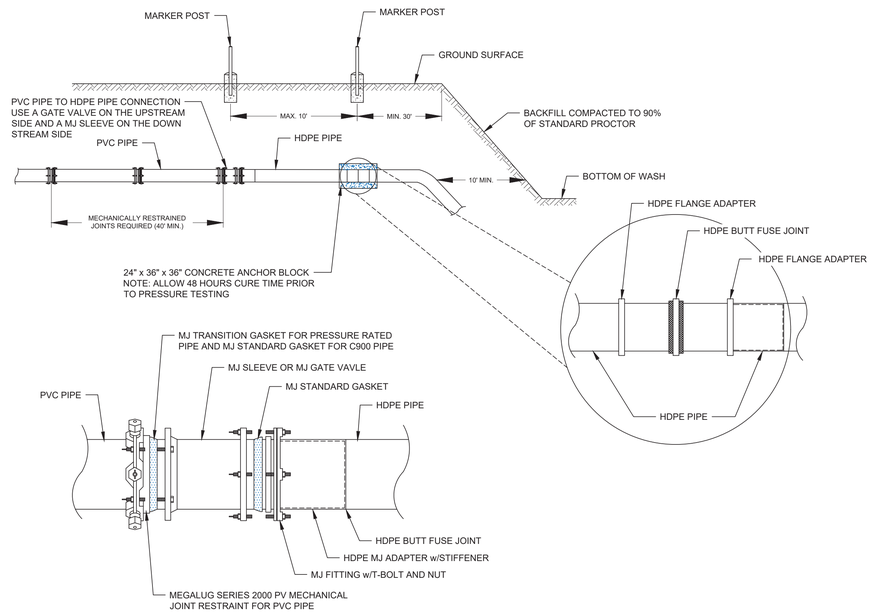
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C-503
SHEET 21 OF 24

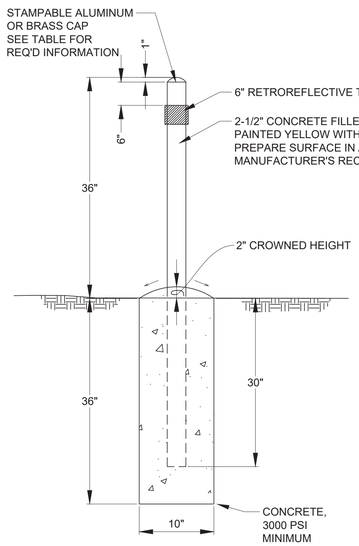


HDPE WASH CROSSING DETAIL

N.T.S.

NOTE:

MARKER POSTS SHALL NOT BE INSTALLED WITHIN THE RIGHT-OF-WAY OF ANY ROADWAYS. UTILITY LINE MARKERS SHALL BE INSTALLED WITHIN ROADWAY RIGHT-OF-WAYS (SEE DETAIL 1B)



MARKER POST DETAIL

CAP SHALL BE STAMPED BY THE CONTRACTOR WITH THE FOLLOWING INFORMATION:

MARKER POST INDICATING	INFORMATION REQUIRED
GV OR ARV	ARROW TO GV OR ARV DISTANCE TO GV OR ARV
BENDS, TEES, AND ALL OTHER WATER SYSTEM FEATURES	PIPE SIZE DESCRIPTION OF BEND/TEE/ETC.

NOTE:

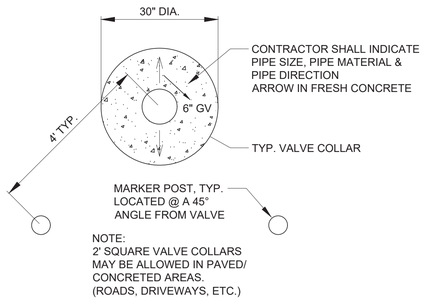
FOR MARKER POST INDICATING GATE VALVES, AIR RELIEF VALVES, BENDS, TEES, CROSSES, OR OTHER FACILITY FEATURES.



NOTE:

ARROW AND DISTANCE TO CENTER OF VALVE BOX OR ARV TO BE STAMPED ON CAP BY THE CONTRACTOR.

MARKER CAP DETAIL



NOTE:
2' SQUARE VALVE COLLARS MAY BE ALLOWED IN PAVED/ CONCRETED AREAS. (ROADS, DRIVEWAYS, ETC.)

EXAMPLE MARKER POST & TYP. VALVE COLLAR - PLAN VIEW

1D METAL MARKER POST

Scale: NTS

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2025
ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2025.10.29 10:52:01 -07'00'

INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

YUMA HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
DETAILS 04
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026

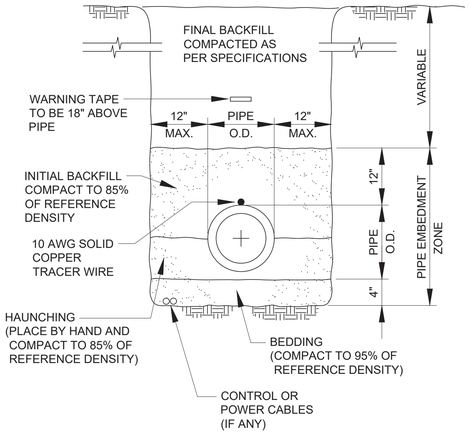
FILE NAME: V24-DETAIL
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-504
SHEET 22 OF 24

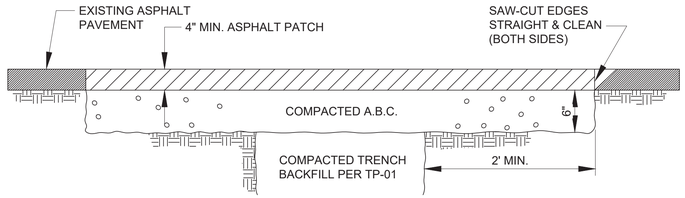
NOTES:

1. SPECIAL IMPORTED BEDDING AND HAUNCHING MATERIAL SHALL MEET THE CRITERIA OF THE UNIFIED SOILS CLASSIFICATION SYSTEM FOR GW, GP, SW OR SP SOILS.
2. ATTACH TRACER WIRE TO PIPE 3 TIMES PER 20' PIPE LENGTH, MINIMUM.

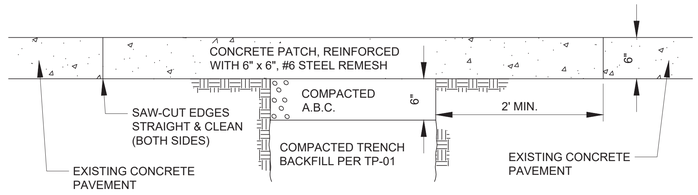
CONDITIONS REQUIRING SPECIAL EMBEDMENT MATERIAL



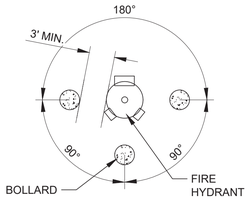
1A **TYPICAL TRENCH SECTIONS**
Scale: N.T.S.



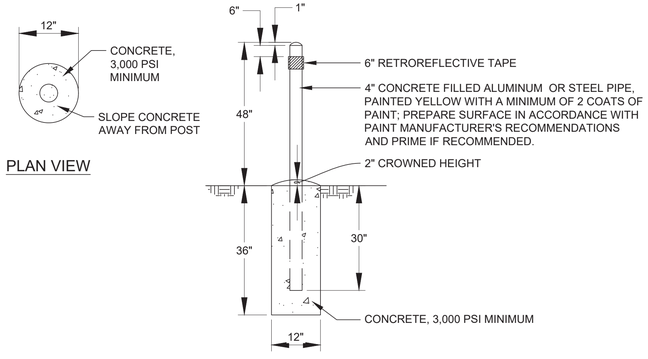
1E **ASPHALT PAVEMENT PATCH**
Scale: N.T.S.



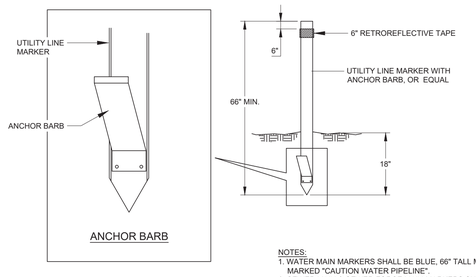
1F **CONCRETE PAVEMENT PATCH**
Scale: N.T.S.



HYDRANT POST LOCATIONS
BOLLARDS SHALL BE THREE (3) FEET MINIMUM FROM THE FACE OF FIRE HYDRANT. ALL ORIFICES SHALL BE UNOBSTRUCTED.



1C **BOLLARD**
Scale: N.T.S.



NOTES:
1. WATER MAIN MARKERS SHALL BE BLUE, 66" TALL MINIMUM, MARKED "CAUTION WATER PIPELINE".
2. SEWER MAIN & SEWER FORCE MAIN MARKERS SHALL BE GREEN, 66" TALL MINIMUM, MARKED "CAUTION SEWER PIPELINE".
3. UTILITY LINE MARKER SHALL BE INSTALLED WITHIN ROADWAY RIGHT-OF-WAYS.

1B **UTILITY LINE MARKER**
Scale: N.T.S.

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil) CERTIFICATE NO. 87774 JOEL GARCIA Date Signed 10/29/26 ARIZONA, U.S.A.

JOEL GARCIA -S
Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:52:39 -07'00'

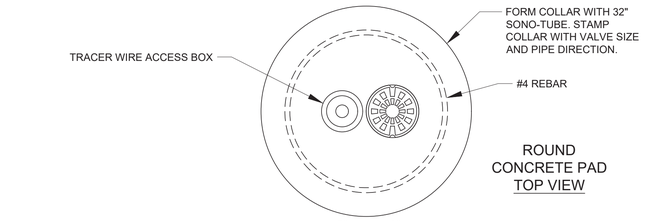
INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
WESTERN ARIZONA DISTRICT OFFICE
1553 WEST TODD DRIVE, SUITE 104
TEMPE, AZ 85283
(480) 592-0091

INDIAN HEALTH SERVICE 1955

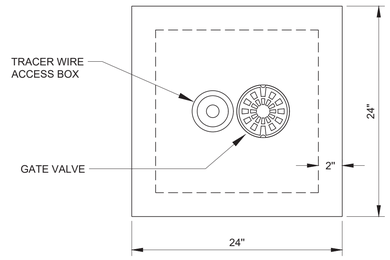
CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
DETAILS '05
PH 18-V24 & 20-V75

DRAWN BY: C.S.	DATE: 09-2026	FILE NAME: V24-DETAIL
CHECKED BY: D.A.	DATE: 10-2026	WA NUMBER: 11-19
APPROVED BY: D.A.	DATE: 10-2026	PROJ ENG: JOEL GRACIA

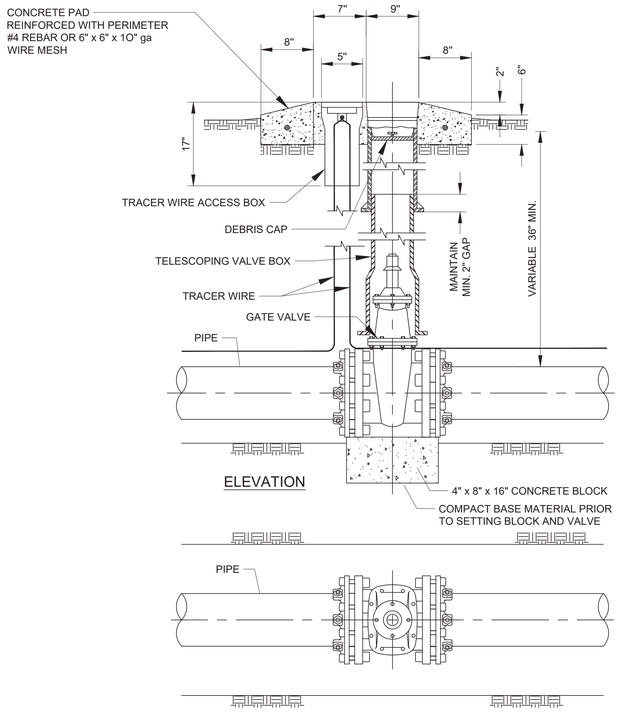
C-505
SHEET 23 OF 24



ROUND
CONCRETE PAD
TOP VIEW



SQUARE CONCRETE PAD
TOP VIEW



ELEVATION

PLAN VIEW

NOTES:

1) IF INSTALLED IN PAVED ROADWAY, CONCRETE PAD SHALL BE FLUSH WITH PAVEMENT.
2) INSCRIBE LINE SIZE, TYPE AND DIRECTION ON THE CONCRETE PAD COLLAR

4B GATE VALVE WITH BOX

Scale: N.T.S.

DATE	REVISIONS	INIT.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
87774
JOEL
GARCIA
Date Signed 10/29/2026
ARIZONA, U.S.A.

JOEL GARCIA -S

Digitally signed by JOEL GARCIA -S
Date: 2026.10.29 10:53:22 -07'00'

INDIAN HEALTH SERVICE
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INDIAN HEALTH SERVICE 1955

CLARKDALE
YAVAPAI-APACHE
YAVAPAI COUNTY, ARIZONA
DETAILS '06
PH 18-V24 & 20-V75

DRAWN BY: C.S. DATE: 09-2026
CHECKED BY: D.A. DATE: 10-2026
APPROVED BY: D.A. DATE: 10-2026

FILE NAME: V24-DETAIL
WA NUMBER: 11-19
PROJ ENG: JOEL GRACIA

C-506
SHEET 24 OF 24