ADDENDUM NO. 2
TO RFP #2024-04
KEYS ROAD RESERVOIR PROJECT
DATE ISSUED: June 28, 2024

TO: PROSPECTIVE BIDDERS AND PLANHOLDERS:

SUBJECT: CLARIFICATIONS AND CHANGES TO THE PLANS AND SPECIFICATIONS

You are hereby notified of the following changes, deletions, additions and corrections to the plans, specifications, and other documents comprising the contract documents.

I. CLARIFICATIONS

a. **Question**: What is the engineer's estimate or cost range for this project?

   Answer: The engineer's opinion of probable construction cost for this project is a range: $8.5 million to $9.3 million.

b. **Question**: Are as-builts available for project elements which will be demolished?

   Answer: Yes, construction record drawings are available and have been published on the planroom site: https://www.wpbplanroom.com/jobs/178/plans/keys-road-reservoir-project

c. **Question**: Instructions to Bidders, 3.10, Public Works Contract, Article 44. States "provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States." Please confirm if the project is subject to domestic material requirements such as AIS or BABA.

   Answer: Neither AIS, BABA, nor other broad domestic material mandate requirements are included in this project.

d. **Question**: What are approximate inlet and outlet flows for the proposed reservoir?

Answer: Average-day inlet flow is around 500 gpm but may go to zero for a short periods of time. Maximum inlet flow is around 3,500 gpm. Maximum outlet flow is 3,500 gpm.

e. **Question**: Could you provide AutoCad files for this project?

Answer: AutoCAD files for this project are not available during the bid period, but select files will be available to the Contractor awarded this project.

f. **Question**: Could you provide the Geotechical report for this project?

Answer: The Geotechnical Data Report for this project is available upon request to Taylor Stockton: tstockton@rh2.com

g. **Question**: Spec section 15.32.03 for AWWA BFV's covers class 150 valves up to 150 PSI working pressure and I see in spec section 1.81.40 that working pressure of all the water lines is 150 PSI. However, on drawing C01 in water main construction note 4 it states that when water system static pressures exceeds 100 PSI that BFV's shall be class 250B. Please clarify if class 250B BFV's are required for the BFV's on this project.

Answer: The drawing referred to static pressure not working pressure. Refer to Section III of this document for an update to the note. Regardless, no 250 class butterfly valves are required.

h. **Question**: Page 15-15 of the technical specifications under Bolts and Nuts states that instead of ceramic-filled fluorocarbon resin, bolts and nuts may be galvanized. Please clarify if zinc plated bolts and nuts would be considered galvanized and allowed under this provision.

Answer: Neither galvanized nor zinc plated bolts are allowed. See update to the specification in Section II below.

i. **Question**: Spec section 15.40.02 covers the double ball expansion joints, but does not specify the expansion required. 16" Flex-Tends are available with 8", 16", or 24" of expansion while 12" Flex-Tends are available with 4", 8", or 12" of expansion. Please clarify what is required here.

Answer: Refer to re-issued Dwg M02 in this addendum for updated information.

j. **Question**: The drawings and specifications reference a proprietary term "Rammed Aggregate Piers." Can a different term be used?

   Answer: Yes, other terms may be used see the discussion of terms included in the updated Section 2.61.1 included with this addendum.

k. **Question**: Specification Section 2.62 and Drawing Sheet C09 show a conflict in design responsibility. It appears the ground improvement contractor is being asked to absorb a prescribed systems settlement risk that requires us to perform an independent analysis of the engineer's design. Is this in fact the intent?

   Answer: The Rammed Aggregate Piers are a contractor-designed element of the project. Section 2.62 contains some minimum requirements for select aspects of a design but does not prescribe the design. Dwg C09 and other drawings indicate that what is shown is just a "conceptual layout." Regardless, refer to the updated version of Section 2.62 included with this addendum for additional clarification.

l. **Question**: Could you add the use of a Vibroflot as a permissible means of aggregate pier installation?

   Answer: Both impact and vibratory aggregate pier placement methods are allowed. Refer to the updated Section 2.64.1 included with this addendum for more detail on allowed methods.

m. **Question**: Drawing C06 shows keynote 11 near the buried sample tap, but doesn't include this number in the Water Relocation Key Notes table telling me what it signifies – please advise.

   Answer: Refer to the revised version of Dwg No. C06 included in this addendum.

n. **Question**: Drawing C15 in water key note 28 states to provide a fire hydrant assembly similar to detail 401 but doesn't give much detail. This appears to be the replacement of an existing hydrant only, is that correct? Please confirm whether the existing hydrant tee, gate valve, and hydrant run of pipe are to remain.

   Answer: The existing hydrant is to be removed and replaced with a new hydrant and gate valve nearby as shown on the updated Dwg No. C15 included in this addendum.

o. **Question**: Drawing C15 in water key note 27 says to restore sample station, and then references detail 405. Please provide more information on what is required here. Is this a new sampling station provided by the contractor or an existing one being rehabilitated and/or re-installed?

> **Answer**: A new sample station is required. See revised note 27 in the updated Dwg No. C15 included with this addendum. Also see the revised Dwg C04 included with this addendum.

p. **Question**: Detail 6 on drawing C21 is for the 16" outlet piping connection and shows a valve on the branch of the tee to the reservoir. However, no other views of this line appear to show a valve on the branch of the tee such as C15, M01, and M02. Please clarify if the third valve on the branch of this tee is required or not.

> **Answer**: The third (branch) valve is not required and should not be included.

q. **Question**: Is a layer or two of geotextile required to protect the 30 mil liner?

> **Answer**: Refer to revised Dwg No. C23 included with this addendum for additional liner, geotextile, and leveling course information.

r. **Question**: Drawing C26 shows a 6" sludge drain line connection to SSMH 3. Is the DI pipe and sleeve fitting to be P401 lined? Does the sleeve fitting need to be restrained or can standard MJ kits be used?

> i. **Answer**: The specifications for DI fittings (Div 15, pg 15) require just cement mortar lining. The fitting is not called out as "RJ", so restraint is not required.

s. **Question**: Detail 217 on sheet C28 is for a buried sample tap and shows an 'injector' extending 1/3 of the way into the pipe. Please provide further information on what is required here.

> **Answer**: Refer to revised Dwg No. C28 included with this addendum for product information.

t. **Question:** Detail 217 on sheet C28 also calls out ½" IPS size HDPE service poly after the curb valve. I am not aware that this size is made. As far as I know, IPS size service poly only goes down to ¾" and only CTS service poly is available in ½" size.

> **Answer**: Refer to revised Dwg No. C28 included with this addendum for updated HDPE pipe requirements.

u. **Question**: Reservoir floor plan (dwg S01) shows tank wall inside radius of 74’-6” and outside wall radius as 75’-6”. However, various details show an 11” thick core wall. Please confirm the core wall thickness and radii.

   Answer: Core wall is 11” thick. See correction to related outside radii in Section III below.

v. **Question**: Reservoir detail C/S05 does not provide a quantity of vertical tendons. We are unable to find the quantity anywhere on the drawings. Please confirm the quantity of vertical tendons that need to be provided.

   Answer: Number of tendons are based on a spacing and that spacing is defined on Dwg S05, Prestressed Wall Elevation as 3’-11½”.

w. **Question**: Reservoir detail 19/S06 (vertical wall joint) does not provide quantity of walls to be provided. Please confirm quantity of wall sections.

   Answer: Number of wall sections is up to the Contractor but influenced by the tendon spacing.

x. **Question**: Section 13.31.20, Part 2 Products, Earthquake Cables, states: “Provide 7-wire galvanized strand.” Detail 8/S03 shows 5-wire strand. Please clarify.

   Answer: The drawings and specifications define different things and are both correct. The drawings show groups of 5 earthquake cables. The specifications define that each earthquake cable is comprised of 7 wires.

y. **Question**: Drawing M02 shows the pipe penetrations to the reservoir and both the 16” and 12” stainless steel embedded piping are shown with an oddball radius on the 90 elbows. Standard radius 90 elbows in steel and stainless steel are 1.5 X the pipe diameter.

   Answer: Graphical display of bends on steel piping are not dimensioned on the drawings and are only for representation purposes. Bend radii and other dimensions shall be provided according to the specified standards.

z. **Question**: Drawing M02 in key note 3 requires tape wrap on exposed stainless steel pipe and flanges. Could you provide more information? The areas indicated for wrapping appear to be just the buried portion not embedded in concrete – is that correct? Is any primer required for the tape? Is there a minimum overlap? And can you provide a manufacturer and model of tape?

   Answer: The tape wrapping referenced on Dwg M02 is required only on the exposed (buried) portion of the indicated piping. Refer reissued Dwg M02 as part of this addendum for tape wrap information.

II. TECHNICAL SPECIFICATIONS

a. **Section 2.60 Rammed Aggregate Piers is replaced in its entirety with the attached version.**

b. **Section 15.22.02, Part 2, Bolts and Nuts, last sentence:**

CURRENTLY READS:

Instead of the ceramic-filled fluorocarbon resin, bolts and nuts may be galvanized.

IS REVISED AS:

c. [Deleted.]

d. **Section 15.32.06.01, Part 2, Seismic Controller, Power supply regarding batteries, second sub-bullet:**

CURRENTLY READS:

Three (3) open-close cycles over a 30-day period without recharging.

IS REVISED AS:

[Deleted.]

III. CONTRACT PLANS

a. **Dwg No. C01, Water Main Construction Note No. 4, third sentence:**

CURRENTLY READS:
WHERE WATER SYSTEM STATIC PRESSURES EXCEED 100 PSI, BUTTERFLY VALVES SHALL BE CLASS 250B, SHORT BODY TYPE IN CONFORMANCE WITH AWWA C504.

IS REVISED AS:
WHERE WATER SYSTEM NORMAL PRESSURES EXCEED 100 PSI, BUTTERFLY VALVES SHALL BE CLASS 250B, SHORT BODY TYPE IN CONFORMANCE WITH AWWA C504.

b. **Dwg No. C04 is replaced in its entirety with the attached updated Dwg No. C04.**
c. **Dwg No. C06 is replaced in its entirety with the attached updated Dwg No. C06.**
d. **Dwg No. C15 is replaced in its entirety with the attached updated Dwg No. C15.**
e. **Dwg No. C21, Detail 6:**
CURRENTLY SHOWS:
A valve on the branch of the tee.
IS REVISED AS:
No valve should be included on the branch of the tee.

f. **Dwg No. C23 is replaced in its entirety with the attached updated Dwg No. C23.**
g. **Dwg No. C28 is replaced in its entirety with the attached updated Dwg No. C28.**

h. **Dwg No. S01, Foundation and Floor Plan, corewall outside face and foundation radii dimensions:**

   CURRENTLY SHOWS FOR THE COREWALL OUTSIDE FACE:
   75’-6”
   IS REVISED AS:
   75’-5”

   CURRENTLY SHOWS FOR THE FOUNDATION:
   77’-6”
   IS REVISED AS
   77’-5”

i. **Dwg No. M02 is replaced in its entirety with the attached updated Dwg No. M02.**
j. **Dwg No. M03 is replaced in its entirety with the attached updated Dwg No. M03.**

Addendum No. 2 is hereby made a part of these contract documents, and its terms and conditions are fully binding on the planholder and contractor.

RH2 ENGINEERING, INC.

By: Justin Barrow, PE

Date: 6/28/2024

Attachments:

Attachment 1: Updated Section 2.60, Rammed Aggregate Piers

Attachment 2: Updated Drawings No. C04, C06, C15, C23, C28, M02, M03

References

ODOT Geotechnical Design Manual (GDM)

AASHTO Standard and Guide Design Specifications

U.S. Department of Transportation Federal Highway Administration (FHWA) design manuals

Submittals

Submit temporary retaining wall stamped Working Drawings and design calculations according to Section 00150.35 of the Standard Specifications, except as modified by this Section. Design temporary retaining walls according to Section 15.3.27, and other applicable sections, of the most current version of the ODOT Geotechnical Design Manual (GDM) at the time of Advertisement.

Part 3 - Execution

Construction

Construct temporary retaining walls according to the reviewed Working Drawings. Maintain temporary retaining walls in a safe and functional condition as long as the walls are in service.

Temporary retaining walls may be incorporated into the finished embankment only if approved by the Engineer.

2.60 RAMMED AGGREGATE PIERS

Part 1 – General

2.61.1 Summary

The terms "stone column" or "aggregate pier" or "Rammed Aggregate Pier" are considered synonymous for the purposes of these Contract Documents.

Work shall consist of designing, furnishing and installing Rammed Aggregate Pier foundations to the lines and grades designated on the project foundation plan and as specified herein. The final determination of the Rammed Aggregate Pier foundations including depths and spacing shall be determined by the Contractor's approved design submittal, with design assumptions verified by a modulus test performed in the presence of and approved by the Geotechnical Engineer of Record. The aggregate piers shall be constructed by either augering a cavity or driving a hollow mandrel or vibrator with a feed tube to the design depth and vertically ramming or vibrating lifts of aggregate to create the compacted aggregate pier. The Rammed Aggregate Pier elements shall be in a columnar-type configuration and shall be used to produce an intermediate foundation system for support of foundation loads.

Contractor shall provide provision of all equipment, material, labor, and supervision to design and install Rammed Aggregate Pier elements. Design shall rely on subsurface information presented in the project geotechnical data report supplemented by the Contractor's data (if deemed necessary by the Contractor). The site will be made accessible to the Bidders and selected Contractor to collect any supplemental geotechnical data deemed necessary to complete the Bid or Design

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The Rammed Aggregate Pier design and installation shall adhere to all methods and standards described in this Specification.

2.61.2 Related Sections

Drawings and General Provisions of the Contract, including General and Supplemental Conditions, and Division 1 Specifications, apply to the work in this specification.

2.61.5 Approved Installers

A. Installers of Rammed Aggregate Pier foundation systems shall have a minimum of 5 years of experience with the installation of Rammed Aggregate Pier systems and shall have completed at least 30 projects.

B. The Rammed Aggregate Pier Installer (the Installer) shall be approved by the Geotechnical Engineer of Record prior to bid opening. Installers currently approved for these works are as follows:

- Geopier-Northwest, Inc., Bellevue, WA
- Keller North America, Inc., Portland, OR
- Geotech Foundation Company West, Hillsboro, OR
- Malcolm, Kent, WA

Without exception, no alternate installer will be accepted unless approved by the Geotechnical Engineer of Record at least one (1) week prior to bid opening.

2.61.4 References

Design:

- "Control of Settlement and Uplift of Structures Using Short Aggregate Piers," by Evert C. Lawton (Assoc. Prof., Dept. of Civil Eng., Univ. of Utah), Nathaniel S. Fox (President, Geopier Foundation Co., Inc.), and Richard L. Handy (Distinguished Prof. Emeritus, Iowa State Univ., Dept. of Civil Eng.), reprinted from *IN-SITU DEEP SOIL IMPROVEMENT, Proceedings of sessions sponsored by the Geotechnical Engineering Division/ASCE in conjunction with the ASCE National Convention held October 9-13, 1994, Atlanta, Georgia.*
- "Settlement of Structures Supported on Marginal or Inadequate Soils Stiffened with Short Aggregate Piers," by Evert C. Lawton and Nathaniel S. Fox. *Geotechnical Special Publication No. 40: Vertical and Horizontal Deformations of Foundations and Embankments,* ASCE, 2, 962-974.
- "Behavior of Geopier®-Supported Foundation Systems during Seismic Events," by Kord Wissmann, Evert C. Lawton, and Tom Farrell. Geopier Foundation Company, Inc. Blacksburg, VA ©1999.
- "Ground Modification Methods – Reference Manual," by Schaerfer, V. R.; Berg, R. R.; Collin, J. G.; and others, 2017, U.S. Federal Highway Administration, Report no. FHWA-NHI-16-027 and FHWA-NHI-16-028, GEC 013, 2 v.

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Modulus Testing:

- ASTM D 1143 - Pile Load Test Procedures
- ASTM D 1194 - Spread Footing Load Test

Materials and Inspection:

- ASTM D 1241 - Aggregate Quality
- ASTM D 422 - Gradation of Soils

Where specifications and reference documents conflict, the Rammed Aggregate Pier Designer shall make the final determination of the applicable document and note the determination in the design submittal.

2.61.5 Submittals

A. Design Submittal - The Installer/Rammed Aggregate Pier Designer shall submit detailed design calculations, construction drawings, and shop drawings for approval by the Engineer at least 4 week(s) prior to the beginning of construction. The design submittal shall include, among other specifics, the gradation specifics of the intended aggregate and drawings identifying the criteria used to calculate the intended aggregate volume (pier depth, nominal pier diameter, number of piers). A detailed explanation of the design parameters for settlement calculations shall be included in the Design Submittal. Additionally, the quality control test programs for Aggregate Pier system, meeting these design requirements, shall be submitted. All calculations and drawings shall be prepared and sealed by a Professional Engineer, licensed in the State of Oregon.

B. Professional Liability Insurance - The Rammed Aggregate Pier Designer shall have Errors and Omissions design insurance for the work. The insurance policy should provide a minimum coverage of $3 million per occurrence.

C. Modulus Test Reports – A modulus test(s) is performed on a non-production Rammed Aggregate Pier element as required by the Rammed Aggregate Pier Designer to verify the design assumptions. The Installer shall furnish the General Contractor (Contractor) a description of the installation equipment, installation records, complete test data, analysis of the test data and verification of the design parameter values based on the modulus test results. The report shall be prepared under direction of a Registered Professional Engineer. The Owner's Engineer shall be notified a minimum of 1 week prior to performing the modulus test and the test shall be performed in the presence of the Geotechnical Engineer of Record.

D. Daily Rammed Aggregate Pier Progress Reports – The Installer shall furnish a complete and accurate record of Rammed Aggregate Pier installation. The record shall indicate the pier location, length, volume of aggregate used or number of lifts, densification forces during installation, and final elevations or depths of the base and top of piers. The record shall also indicate the type and size of the installation equipment used, and the type of aggregate used. The Installer shall immediately report any unusual conditions encountered during installation to the Contractor, to the Designer and to the Geotechnical Engineer of Record.

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2.62 Design Requirements

2.62.1 Rammed Aggregate Pier Design

A. The Rammed Aggregate Pier system shall be designed in accordance with generally-accepted engineering practice and the methods described in Section 2.61 of these Specifications. The design life of the structure shall be 50 years.

B. The design shall be based on the following static loading from the structure:

- Footings (wall and columns): 2,380 psf
- Floor slab minimum loading between footings: 1,670 psf

C. The design shall meet the following criteria:

- Estimated Total Long-Term Settlement for Foundations (column and exterior wall footing): ≤ 1.5-inch
- Estimated Long-Term Differential Settlement: ≤ 0.5-inch in 50 feet

D. The Rammed Aggregate Pier elements shall be designed and installed with a minimum area replacement ratio of 13 percent and a minimum 2,000 cubic yard volume of installed aggregate or as approved by the Engineer and Owner.

E. The Rammed Aggregate Pier layout shall be of a spacing where the center of one pier shall be located directly under the center of each of the intended reservoir column locations shown in the Structural Plans.

F. The Rammed Aggregate Pier elements shall be designed using a Rammed Aggregate Pier stiffness modulus to be verified by the results of the modulus test described in Section 2.65.2 of these specifications.

G. The Rammed Aggregate Pier design submittal shall be accompanied by a proposal from the Contractor detailing a method of short term settlement performance verification. The verification method shall include reference points on both the walls and roof. Examples of potential reference points include but are not limited to the following:

- Wall reference points could be studs placed in the reservoir wall exterior--one on each side of the reservoir (north, south, east, and west) at an elevation and location which will be accessible after construction.
- Roof reference points could be pins cast into the roof above four columns spaced as far apart as is visible on one side of the reservoir roof.

The verification method shall include establishing a baseline elevation for each point after reservoir construction but before reservoir filling.

The verification method shall include a loaded condition reading after the reservoir is online (full of water, in use by the City). Total settlement of each point shall be calculated. Differential settlement of each point relative to each other point shall be calculated.

The approved method shall be performed by the Contractor and reported to the Engineer. If short-term performance shows settlement exceeding the estimated long-term performance criteria of Section 2.62.1.C, the Rammed Aggregate Pier system will be

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considered out of compliance and will entitle the Owner to an additional one year of warrantee period applying to the reservoir and any utility within 50 feet of the reservoir.

Part 2 – Products

2.63 Materials

2.63.1 Aggregate

A. Aggregate used by the Rammed Aggregate Pier Installer for pier construction shall be pre-approved by the Designer and Engineer and shall demonstrate suitable performance during modulus testing. Typical aggregate consists of Type 1 Grade B in accordance with ASTM D-1241-68, No. 57 stone or other graded aggregate approved by the Designer and Engineer.

B. Potable water or other suitable source shall be used to increase aggregate moisture content where required.

Part 3 – Execution

2.64.1 Approved Installation Procedures

The following sections provide general criteria for the construction of the Rammed Aggregate Pier elements. Unless otherwise approved by the Geotechnical Engineer of Record, the installation method used for Rammed Aggregate Pier construction shall be that as used in the construction of the successful modulus test. Both augered systems and displacement systems are allowable methods as follows:

A. Augered systems –

1. The system shall be pre-augered using mechanical drilling or excavation equipment. Augered holes shall use a cleanout bucket as necessary to remove excess cuttings.

2. If cave-ins exceeding 10% of the lift volume occur during excavation such that the sidewalls of the hole are deemed to be unstable, steel casing shall be used to stabilize the cavity or a displacement system may be used.

    i. Subsurface conditions presented in the Geotechnical Data Report indicate that the upper Missoula Flood Deposits in the upper 1 to 7 feet below the load transfer platform elevation may be relatively loose and that shallow perched groundwater should be anticipated. Therefore, this formation may become unstable and may require use of a temporary casing.

3. Aggregate shall be placed in the augered cavity in lift thicknesses as determined by the Rammed Aggregate Pier Designer and shall be placed using a dry method.

4. A high-energy densification apparatus shall be employed to densify lifts of aggregate during installation. The apparatus shall apply direct downward impact or vibratory energy to each lift of aggregate.

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B. Displacement systems –

1. Displacement systems shall be constructed by advancing a specially designed mandrel or vibrator to the full design depth of the pier and compacting aggregate in lifts starting from the bottom of the full depth.
2. Compaction equipment that that uses water to facilitate excavation is not permitted.
3. If subsurface conditions prevent the installer from installing a displacement system pier element to the approved design submittal depth, the installer shall utilize instead the augered system method to obtain the approved design depth for the pier at no additional cost to the Owner.

2.64.2 Location and Elevation of Rammed Aggregate Pier Elements

The as-built center of each pier shall be within 6 inches of the locations indicated on the approved Design Submittal. Piers installed outside of the above tolerances and deemed not acceptable shall be rebuilt at no additional expense to the Owner.

2.64.3 Rejected Rammed Aggregate Pier Elements

Rammed Aggregate Pier elements installed beyond the allowable tolerances of the Design Submittal shall be abandoned and replaced with new piers, unless the Designer approves the condition or provides other remedial measures. All material and labor required to replace rejected piers shall be provided at no additional cost to the Owner, unless the cause of rejection is due to an obstruction.

2.65 Quality Control

2.65.1 Control Technician

The Installer shall have a full-time, on-site Control Technician to verify and report all installation procedures. The Installer shall immediately report any unusual conditions encountered during installation to the Rammed Aggregate Pier Designer, the Contractor, and to the Geotechnical Engineer of Record.

2.65.2 Rammed Aggregate Pier Modulus Test

As required by the Rammed Aggregate Pier Designer and Geotechnical Engineer of Record, a Rammed Aggregate Pier Modulus Test(s) will be performed at locations agreed upon by the Rammed Aggregate Pier Designer and the Geotechnical Engineer of Record to verify or modify Rammed Aggregate Pier designs. A minimum of one single-element Modulus Test shall be performed on a sacrificial pier installed outside of the reservoir footprint. Modulus Test Procedures shall utilize appropriate portions of ASTM D1143 and ASTM D1194, as outlined in the Rammed Aggregate Pier design submittal. The Modulus Test(s) shall be of the type and installed in a manner specified herein.

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A. The test plate/cap shall have the same diameter as the Rammed Aggregate Pier element design diameter and shall not extend beyond the edge of the Rammed Aggregate Pier element and over the matrix soil.

B. The test element shall be tested to a load equal to the element area times at least 150 percent of the Rammed Aggregate Pier element's maximum design stress (not allowable bearing pressure for footings) to demonstrate that the element exhibits safe response during service loading. The Rammed Aggregate Pier element's maximum design stress is the maximum stress on the individual element (which attracts more stress than the surrounding matrix soil) and is typically at least 3 to 5 times the allowable bearing pressure for footings. Single-element modulus tests that are proposed to be loaded as a function of allowable bearing pressure are not considered standard practice and will not be accepted since the allowable bearing pressure is often only a fraction of the Rammed Aggregate Pier element's maximum design stress.

C. A telltale shall be installed at the bottom of the test element so that bottom-of-element deflections may be determined. Acceptable performance is indicated when the bottom of the element deflection is no more than 30 percent of the top of element deflection at the design stress level.

D. ASTM D-1143 general test procedures shall be used as a guide to establishing load increments, load increment duration, and load decrements. As a minimum, the following loading increments, decrements and duration shall be used.

Increment	Approximate Load (percent design)	Minimum Duration (min)	Maximum Duration (min)
Seat	< 9	0	N/A
1	17	15	60
2	33	15	60
3	50	15	60
4	67	15	60
5	83	15	60
6	100	15	60
7	117	60	120
8	133	15	60
9	150	15	60
10	100	N/A	N/A
11	66	N/A	N/A
12	33	N/A	N/A
13	0	N/A	N/A

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E. With the exception of the load increment representing approximately 117 percent of the Rammed Aggregate Pier element maximum design stress, all load increments shall be held for a minimum of 15 minutes. Loads are then maintained until the rate of deflection reduces to 0.01 inch per hour or for the maximum of 1 hour, whichever is occurs first.

F. Creep Test - The load increment that represents approximately 117 percent of the Rammed Aggregate Pier element maximum design stress shall be held for a minimum of 15 minutes. Loads are then maintained until the rate of deflection reduces to 0.01 inch per hour or for the maximum of 4 hours, whichever is occurs first.

G. A seating load equal to 5 percent of the total load shall be applied to the loaded steel plate prior to application of load increments and prior to measurement of deflections to compensate for surficial disturbance.

H. If the modulus test indicates values lower than those required by the design submittal, retesting and/or redesign (and any additional means, methods, or material) shall be provided at no cost to the Owner.

2.65.3 Verification Program

Submit and follow a verification program to ensure the intended design performance of the pier bottom.

If an installation method employing aggregate installed by impact methods is the selected installation method, employ the following Bottom Stabilization testing (BST) or Crowd Stablization testing (CST) verification program or alternative method approved by the Geotechnical Engineer of record. If a vibratory installation method is selected, this BST/CST approach is not required, but an alternate verification program shall be developed and submitted for review with the design submittal.

Bottom stabilization testing (BST) or Crowd stabilization testing (CST) shall be performed by the Control Technician during the installation of the modulus test pier. Additional testing as required by the Rammed Aggregate Pier Designer shall be performed on selected production Rammed Aggregate Pier elements to compare results with the modulus test pier.

A. BST shall be performed after completion of the pier bottom bulb, or at any time during the process of constructing the pier.

B. BST shall be performed on all modulus test piers, at a minimum when a new soil formation is encountered, and at the beginning of each production day to provide quantitative information on pier stabilization.

C. BST should be performed on at least 10 percent of the Rammed Aggregate Piers constructed each day, or a minimum of 1 of the piers installed each day—whichever is greater.

D. Acceptable performance is indicated if the vertical movement of the shaft is less than 150 percent of the vertical movement measured during BST of the modulus test pier.

E. If the measured vertical movement exceeds 150 percent of the BST value measured during the modulus test, added energy is applied to further densify the bulb. The test procedure is then repeated. If there is still movement greater than 150 percent of that achieved during

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the modulus test BST, a lift of aggregate may be placed on top of the of the compacted aggregate, and a BST may be performed on this next lift after it is rammed. Movement must be limited to below 150 percent of the BST values measured for the modulus test before completion of the lower 2/3 of the pier shaft. If there is excessive movement at this point, the Rammed Aggregate Pier Designer shall be consulted to determine the pier acceptance.

2.66 Quality Assurance

2.66.1 Owner's Quality Assurance

The Rammed Aggregate Pier Installer shall provide full-time Quality Control monitoring of Rammed Aggregate Pier construction activities. The Owner is responsible for retaining the Geotechnical Engineer of Record to provide Quality Assurance services.

2.66.2 Responsibilities of Geotechnical Engineer of Record

A. The Geotechnical Engineer of Record shall monitor the modulus test pier installation and testing. The Installer shall provide and install all dial indicators and other measuring devices.

B. The Geotechnical Engineer of Record shall monitor the installation of Rammed Aggregate Pier elements to verify that the production installation practices are similar to those used during the installation of the modulus test elements.

C. The Geotechnical Engineer of Record shall observe the excavation, compaction and placement of the load transfer platform as described in Section 2.67.5. Dynamic Cone Penetration testing may be performed to evaluate the foundation bottom condition as determined by the Testing Agency.

2.67 Responsibilities of the Contractor

2.67.1 Site Preparation and Protection

A. The Contractor shall provide advanced notice of at least 72 hours to the Geotechnical Engineer of Record prior to any activity requiring the Geotechnical Engineer of Record as described in Section 2.66.2.

B. The Contractor shall locate and protect underground and aboveground utilities and other structures from damage during installation of the Rammed Aggregate Pier elements.

C. The Contractor will provide site access to the Installer, after earthwork in the area has been completed. A working surface shall be established and maintained by the Contractor to provide wet weather protection of the subgrade and to provide access for efficient operation of the Rammed Aggregate Pier installation.

D. Ground elevations for the working surface shall be provided to the Rammed Aggregate Pier Installer in sufficient detail to estimate installation depth elevations to within 3 inches.

E. Prior to, during and following Rammed Aggregate Pier installation, the Contractor shall provide positive drainage to protect the site from wet weather and surface ponding of water.

ADDENDUM NO. 2, ATTACHMENT 1

F. If spoils are generated by Rammed Aggregate Pier installation, spoil removal from the Rammed Aggregate Pier work area in a timely manner to prevent interruption of Rammed Aggregate Pier installation is required.

2.67.2 Rammed Aggregate Pier Layout

The location of Rammed Aggregate Pier-supported foundations for this project, including layout of individual Rammed Aggregate Pier elements, shall be marked in the field using survey stakes or similar means at locations shown on the drawings.

2.67.3 Excavation of Obstructions

A. Should any obstruction be encountered during Rammed Aggregate Pier installation, the Contractor shall be responsible for promptly removing such obstruction, or the pier shall be relocated or abandoned. Obstructions include, but are not limited to, boulders, timbers, concrete, bricks, utility lines, etc., which shall prevent placing the piers to the required depth, or shall cause the pier to drift from the required location.

B. Dense natural rock or weathered rock layers shall not be deemed obstructions, and piers may be terminated short of design lengths on such materials.

2.67.4 Utility Excavations

The Contractor shall coordinate all excavations made subsequent to Rammed Aggregate Pier installations so that excavations do not encroach on the piers as shown in the Rammed Aggregate Pier construction drawings. Protection of completed Rammed Aggregate Pier elements is the responsibility of the Contractor. In the event that utility excavations are required in close proximity to the installed Rammed Aggregate Pier elements, the Contractor shall contact the Rammed Aggregate Pier Designer immediately to develop construction solutions to minimize impacts on the installed Aggregate Pier elements.

2.67.5 Load Transfer Platform

A. After completion of the Rammed Aggregate Piers, construction of a load transfer platform will be required and shall be the responsibility of the Contractor.

B. Materials, lift thickness, and compaction requirements for the load transfer platform construction shall be in accordance with Section 2.11.9.

C. Minimum thickness of the load transfer platform is 2-feet thick.

D. The load transfer platform shall be capped with a leveling course layer. The leveling course material shall be in accordance with Section 2.11.10.

E. The tops of Rammed Aggregate Pier elements shall be protected prior to placement of the load transfer platform, with procedures and equipment best suited to (1) avoid exposure to water, (2) prevent softening of the matrix soil between and around the Rammed Aggregate Pier elements, and (3) achieve direct and firm contact between the dense, undisturbed Rammed Aggregate Pier elements and the load transfer platform.

F. The following criteria shall apply, and a written inspection report prepared by the project Contractor shall be furnished to the Installer and Owner to confirm:

ADDENDUM NO. 2, ATTACHMENT 1

- That water (which may soften the unconfined matrix soil between and around the Rammed Aggregate Pier elements, and may have detrimental effects on the supporting capability of the Rammed Aggregate Pier reinforced subgrade) has not been allowed to pond during the Rammed Aggregate Pier installation at any time.
- That no excavations have been made after installation of Aggregate Pier elements within the excavation limits described in the Rammed Aggregate Pier construction drawings, without the written approval of the Installer or Designer.

2.70 CONTAMINATED & WASTE MATERIALS HANDLING

2.70.2 Waste Material Control

Part 1 – General

Quality Assurance

Adhere to all requirements of federal, state, and local statutes and regulations dealing with pollution. Permit no public nuisances.

Use only dump sites that are approved by the regulatory agency having jurisdiction, and present proof of approval upon request.

Part 3 – Execution

Installation/Construction

The Contractor shall take precautions to warn, protect, and prevent the public from all hazards that exist on site due to demolition or construction operations. Surround stockpiled debris with yellow warning tape attached to lath, stakes, poles, or fencing to warn the public of any potential hazard.

Use water sprinkling, temporary enclosures, or other methods to limit dust and dirt from rising and scattering in the air. Collect and clean surface water runoff that is contaminated with site debris, silt, or other material that adversely affects water quality prior to discharge. On-site collection ponds may not be used to keep silt laden water from entering the storm water collection system.

Do not use water to control dust when its use may create hazardous or objectionable conditions such as ice formation, flooding, or pollution.

Minimize the amount of dust and other airborne particles caused by any demolition, excavation, stockpiling, or removal activities. Implement dust control measures prior to the beginning of work activities. Exposed soil may be wetted with water or covered to minimize dust creation. Water runoff from the wetting procedure shall be accumulated and cleaned prior to disposal. Remove water runoff accumulation from the site prior to project completion.

Cleaning

Keep the construction area clean and orderly. Upon completion of the work, leave buildings broom clean and all parts of the work clean and free of rubbish and excess material of any kind. Leave fixtures, equipment, walls, and floors clean and free of stains, paint, roofing splashes, or other marks or defects. Upon completion, restore site and all work or equipment

ADDENDUM NO. 2, ATTACHMENT 1

DEMOLITION KEY NOTES

1. REMOVE AND DISPOSE OF EXISTING 1.0 MG RESERVOIR AND ASSOCIATED APPURTENANCES AND PIPING.
2. REMOVE AND DISPOSE OF EXISTING ABANDONED 0.2 MG RESERVOIR AND ASSOCIATED APPURTENANCES AND PIPING.
3. REMOVE AND DISPOSE OF EXISTING VALVE VAULT AND ASSOCIATED APPURTENANCES AND PIPING.
4. REMOVE AND DISPOSE OF EXISTING ASPHALT ACCESS ROAD.
5. REMOVE AND DISPOSE OF EXISTING TREES.
6. REMOVE AND DISPOSE OF EXISTING TREE ON PRIVATE PROPERTY. INDICATED SIZE IS APPROXIMATE. COORDINATE ACCESS WITH CITY AND PROPERTY OWNER.
7. LIMITS OF DISTURBANCE ON PRIVATE PROPERTY, RESTRICT USE OF ACCESS TO TREE REMOVAL ACTIVITIES. SOW NATIVE GRASS SEED MIX AND DISTRIBUTE STRAW MULCH FOR EROSION CONTROL WITHIN 48-HOURS OF GROUND DISTURBANCE.
8. REMOVE AND DISPOSE OF EXISTING FENCE. REPLACE WITH RELOCATED FENCE.
9. EXISTING WATER MAIN TO BE RELOCATED.
10. EXISTING POWER TO BPS TO BE RELOCATED.
11. EXISTING SANITARY SEWER TO BE REMOVED AND RELOCATED. PERFORM CCTV INSPECTION OF EXISTING SEWER LINE FROM UPSTREAM MANHOLE TO EXISTING MANHOLE WITHIN KEYS ROAD RIGHT-OF-WAY. PROVIDE CITY INSPECTION VIDEO FOR REVIEW MINIMUM OF TWO WEEKS PRIOR TO PERFORMING SEWER RELOCATION.
12. EXISTING STORM MH TO BE REPLACED AND RELOCATED.
13. EXISTING TELEMETRY TO BE REMOVED/ABANDONED. REMOVE EXISTING CONDUCTORS. REMOVE AND DISPOSE OF EXISTING CONDUITS AS NECESSARY FOR PROPOSED IMPROVEMENTS. ABANDON IN PLACE CONDUITS REMAINING.
14. EXISTING STORM MH TO BE ABANDONED. REMOVE AND DISPOSE OF TOP SECTIONS AND FILL BOTTOM SECTION WITH DRAIN ROCK.
15. EXISTING TRANSFORMER, PROTECT IN PLACE.
16. EXISTING BPS, PROTECT IN PLACE.
17. GRIND FELLED TREE STUMP AND ROOTS MIN 6" BELOW GRADE.
18. EXISTING HMAC PAVEMENT TO BE REPLACED.
19. EXISTING SAMPLE STATION TO BE REMOVED AND SALVAGED TO OWNER. ⚠
20. REMOVE AND DISPOSE OF EXISTING CONCRETE SLAB.

REFERENCES:
1. SEE DWG NO. C06 FOR UTILITY RELOCATIONS.
2. SEE DWG NO. C05 FOR DEMOLITION PHOTOS. XX

CONSTRUCTION LIMITS NOTES

GENERAL NOTES:
1. CONSTRUCTION LIMITS IS DEFINED AS THE FENCED AREA OF THE SITE (INCLUDING PROPOSED FENCE ALONG EAST PROPERTY LINE) WITH EXCEPTIONS NOTED HEREIN.
2. CONSTRUCTION ACCESS OUTSIDE OF THE CONSTRUCTION LIMITS IS ALLOWED FOR ONLY THE FOLLOWING WORK:
   - 2.1. 28" BIG LEAF MAPLE REMOVAL
   - 2.2. LANDSCAPING AND IRRIGATION INSTALLATION (SEE DWG C18)
3. COORDINATE WITH THE OWNER AT LEAST 7 CALENDAR DAYS AHEAD OF WORK OUTSIDE OF THE CONSTRUCTION LIMITS AND WORK RESTRICTING OWNER ACCESS TO AREAS OUTSIDE THE CONSTRUCTION LIMITS.
4. CONSTRUCTION TRAILERS ARE PROHIBITED AT EXISTING GRADE ELEVATIONS ABOVE 200 FT EXCEPT WHERE OTHERWISE NOTED.

CONSTRUCTION LIMITS KEY NOTES:

A. CONSTRUCTION ACCESS PROHIBITED OUTSIDE OF CONSTRUCTION FENCE EXCEPT WHILE PERFORMING THE FOLLOWING WORK: TREE REMOVAL, FENCE RELOCATION, PAVEMENT REMOVAL AND REPLACEMENT, PIPE AND FLOW METER REMOVAL AND REPLACEMENT, CONDUIT AND CONDUCTOR INSTALLATION (SEE DWG NO. E02), RETAINING WALL CONSTRUCTION (SEE DWG NO. C31). COORDINATE WITH THE OWNER AT LEAST 7 CALENDAR DAYS AHEAD OF THIS WORK.

B. MAINTAIN CITY VEHICLE ACCESS THROUGH NORTH STREET ENTRANCE AT ALL TIMES

C. CONSTRUCTION ACCESS THROUGH SITE NORTH GATE (AND NORTH STREET ENTRANCE) IS LIMITED TO VEHICLES UNDER 26,001 LB GROSS VEHICLE WEIGHT RATING. EXCEPT IN LIMITED CIRCUMSTANCES AND WITH ADVANCE APPROVAL FROM OWNER, CONTRACTOR SHALL BE RESTRICTED FROM USING OR WORKING IN ANY AREAS WITHIN THE UPPER PORTIONS OF THE WTP, PARKING AND ACCESS ROAD.

D. MATERIALS STORAGE IS PROHIBITED IN THE BPS.

DEMOLITION SEQUENCING PLAN

THIS SEQUENCING PLAN IS PROVIDED AS GENERAL INFORMATION TO THE CONTRACTOR(S) TO ILLUSTRATE BASIC SEQUENCING REQUIREMENTS AND SHALL NOT BE CONSIDERED TO BE COMPLETE IN DETAIL IN ALL RESPECTS. THIS PLAN SHALL NOT BE INTERPRETED AS DIRECTION TO THE CONTRACTOR WITH RESPECT TO MEANS AND METHODS. AS PART OF THIS CONTRACT'S PROVISIONS, THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED CONSTRUCTION SCHEDULE AND PHASING PLAN TO THE ENGINEER WHICH SHALL INCORPORATE SEQUENCING REQUIREMENTS AND PRESENT THE CONTRACTOR'S PROPOSED DETAILED PROGRAM FOR ACCOMPLISHING THE WORK.

PHASE 1 - PRE-CONSTRUCTION AND SITE PREP
- 1.1 ESTABLISH TESC MEASURES
- 1.2 TREE REMOVAL AND SITE PREP
- 1.3 RELOCATE EXISTING FENCE

ADDITIONAL PHASE 1 ACTIVITIES
- MOBILIZE TO SITE
- ESTABLISH STAGING AREA

PHASE 2 - UTILITY RELOCATIONS ⚠
- 2.1 CUT-IN TEE AND VALVE AT NORTH END OF 16" WATERLINE. INSTALL AND COMMISSION SAMPLE LINE AND WATER QUALITY ANALYZER PANEL, SEE DWG NO. C06 FOR DETAILS.
- 2.2 INSTALL STRADDLE BLOCK AND CUT-IN VALVE AT BPS SUCTION. SEE DWG NO C19 FOR DETAILS.
- 2.3 CAP AND REMOVE RAW WATER CONNECTION AT VALVE VAULT, SEE DWG NO. C19 FOR DETAILS.
- 2.4 INSTALL AND TEST RELOCATED 16" WATERLINE THROUGH PROPOSED FLOW METER AND EXISTING VALVE VAULTS. SEE DWG NO. C19 FOR DETAILS. DO NOT MAKE CONNECTION TO EXISTING. RELOCATE POWER.
- 2.5 RELOCATE SANITARY SEWER.

PHASE 2 - RESERVOIR DEMOLITION
- 3.1 MAKE FINAL CONNECTION TO EXISTING AT VALVE AND FLOW METER VAULTS.
- 3.2 DEMOLISH 1.0 MG RESERVOIR, VALVE VAULT AND ASSOCIATED PIPING AND APPURTENANCES.
- 3.3 DEMOLISH 0.2 MG RESERVOIR, ASSOCIATED PIPING AND APPURTENANCES.
- 3.3 RELOCATE STORM DRAIN.

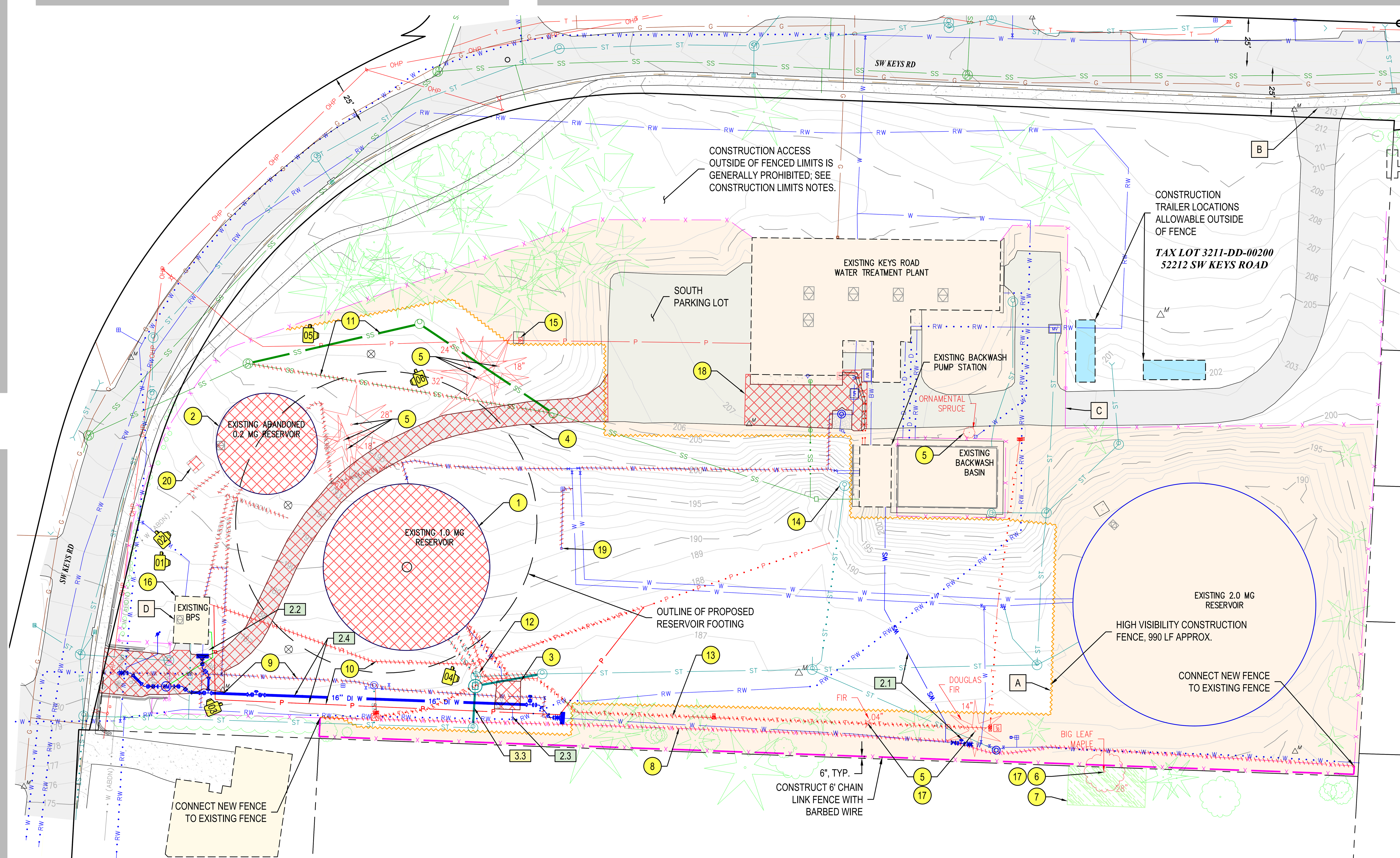
SHUTDOWN NOTES

GENERAL NOTES:

A. COORDINATE ALL SHUTDOWNS WITH THE CITY. A FACILITY SHUTDOWN IS ANY CONSTRUCTION ACTIVITY, INCLUDING CONNECTIONS TO EXISTING WATER MAINS, WHICH INHIBITS NORMAL CITY OPERATION OF ANY FACILITY ELEMENT. TELEMETRY SHUTDOWN IS ANY CONSTRUCTION ACTIVITY WHICH ALLOWS CONTINUED CITY FACILITY OPERATION BUT ONLY IN "HAND" CONTROL MODE (DISCONNECTION FROM SCADA).
B. PROVIDE THE CITY WITH 7 CALENDAR DAYS OF NOTICE AHEAD OF A REQUESTED SHUTDOWN.
C. DO NOT OPERATE EXISTING BURIED VALVES. COORDINATE WITH CITY WHO WILL PERFORM ALL VALVE OPERATION.
D. SHUTDOWN AND DEMOLITION OF 1.0 MG RESERVOIR AND VALVE VAULT MAY NOT OCCUR UNTIL AFTER THE PEAK WATER DEMAND SEASON. FOR PLANNING PURPOSES, CONTRACTOR SHOULD ASSUME PEAK SEASON OCCURS FROM MAY 31ST TO OCTOBER 1ST..

NOTES:
1. THE BPS IS THE PRIMARY MEANS OF TRANSFERRING WATER TO THE UPPER ZONE. FACILITY SHUTDOWNS AFFECTING BPS SHALL BE LIMITED TO AN 8-HOUR PERIOD.
2. FACILITY SHUTDOWNS AFFECTING EXISTING TRANSMISSION MAIN SHALL BE LIMITED TO A MAXIMUM OF 8 HOURS. THE EXISTING TRANSMISSION MAIN MUST GENERALLY REMAIN IN SERVICE UNTIL THE 1.0 MG RESERVOIR IS TAKEN OFFLINE.
3. TELEMETRY SHUTDOWNS OF THE BPS SCHEDULED TO BE LONGER THAN 3 HOURS ARE LIMITED TO 8 HOURS AND MAY ONLY OCCUR BETWEEN 7 AM AND 4 PM. TELEMETRY SHUTDOWNS SHORTER THAN 3 HOURS ARE CONSIDERED FACILITY SHUTDOWNS.
4. FACILITY SHUTDOWNS AFFECTING GRAVITY PIPING (STORM & SEWER) MUST BE COORDINATED TO MAINTAIN WTP OPERATION AND MEET 1 OF THE FOLLOWING REQUIREMENTS.
   - 4.1. PROVIDE FLOW BLOCKAGE AND LEVEL MONITORING* FOR SHUTDOWNS UP TO 48 HOURS.
   - 4.2. PROVIDE BYPASS PUMPING AND LEVEL MONITORING* FOR SHUTDOWNS UP TO 96 HOURS.

   *LEVEL MONITORING SHALL INCLUDE HIGH LEVEL FLOAT TRIGGERED VISUAL AND AUDIBLE ALARMING.
5. TELEMETRY SHUTDOWNS FOR SOUTH FLOW METER SHALL BE LIMITED TO 48 HOURS. USE TEMPORARY AND/OR EXISTING CONDUCTORS TO ENSURE SOUTH FLOW METER SCADA CONNECTION OUTSIDE OF SHUTDOWNS UNTIL THE STARTUP OF THE NEW BPS TELEMETRY PANEL.



DEMOLITION PLAN

1" = 30'

RH2

REGISTERED PROFESSIONAL ENGINEER 94740 OREGON MARCH 12, 2018 JUSTIN R. BARROW

EXPIRES: 12/31/2025

SIGNED: 06/05/2024

CITY OF SCAPPOOSE

KEYS ROAD RESERVOIR

DEMOLITION PLAN

ADDENDUM NO. 2, ATTACHMENT 2

NO.	DATE	DESCRIPTION	BY	REVIEW
⚠	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

REVISIONS

ENGINEER: JLC | REVIEWED: JRB | SAVE DATE: Jun 27, 2024 | PLOT DATE: Jun 27, 2024 | CLIENT: SCAP | FILENAME: KEYS-P-DEMOP.DWG | JOB NO.: 230-093

SCALE: SHOWN

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C04

SHEET NO.: 06 / 68

STORM RELOCATION KEY NOTES

01 N: 769454.63 E: 7592172.44, PROVIDE:
72" ST DETENTION MH W/ ORIFICE PLATE (ST MH-1) (209/C25)

02 N: 769486.68 E: 7592166.62, PROVIDE:
CONNECTION TO EXISTING MH ST-18

03 N: 769453.56 E: 7592191.43, PROVIDE:
CONNECTION TO EXISTING MH ST-20

SEWER RELOCATION KEY NOTES

01 N: 769340.08 E: 7592005.96, PROVIDE:
CONNECTION TO EXISTING MH SS-2

02 N: 769425.96 E: 7591986.19, PROVIDE:
SANITARY SEWER MANHOLE (SSMH 1)

03 N: 769494.68 E: 7592032.16, PROVIDE:
SANITARY SEWER MANHOLE (SSMH 2), REMOVE AND REPLACE EXISTING MANHOLE SS-4

WATER RELOCATION KEY NOTES

01 N: 769290.36 E: 7592172.63, PROVIDE:
(1) - 12" GATE VALVE (RJxRJ)
(1) - 12" DI SPOOL (PExPE)
BEGIN CONNECTION TO EXISTING 16" DI

02 N: 769295.55 E: 7592172.63, PROVIDE:
SOUTH FLOW METER MANHOLE (205/C24)

03 N: 769307.03 E: 7592175.64, PROVIDE:
(2) - 16" DI 45° BEND (RJxRJ), ROLL TO ACHIEVE VERTICAL AND HORIZONTAL ALIGNMENT
(3) - 16" DI SPOOL (PExPE)
(1) - 16" x 12" DI REDUCER (RJxRJ)

04 N: 769317.19 E: 7592176.02, PROVIDE:
(1) - 16" x 12" DI TEE (RJxRJ)
(1) - 16" DI SPOOL (PExPE)
(1) - 16" BUTTERFLY VALVE (RJxRJ)
(1) - 12" DI SPOOL (PExPE)
(1) - 12" GATE VALVE (RJxRJ)

05 N: 769317.37 E: 7592171.24, PROVIDE:
BEGIN CONNECTION TO EXISTING 12" CI

06 APPROX. 25 LF of 16" RJ DI PIPE

07 N: 769341.9 E: 7592176.92, PROVIDE:
(1) - 16" DI TEE (RJxRJ)
(2) - 16" DI SPOOL (PExPE)
(2) - 16" BUTTERFLY VALVE (RJxRJ)
(1) - 16" DI PLUG

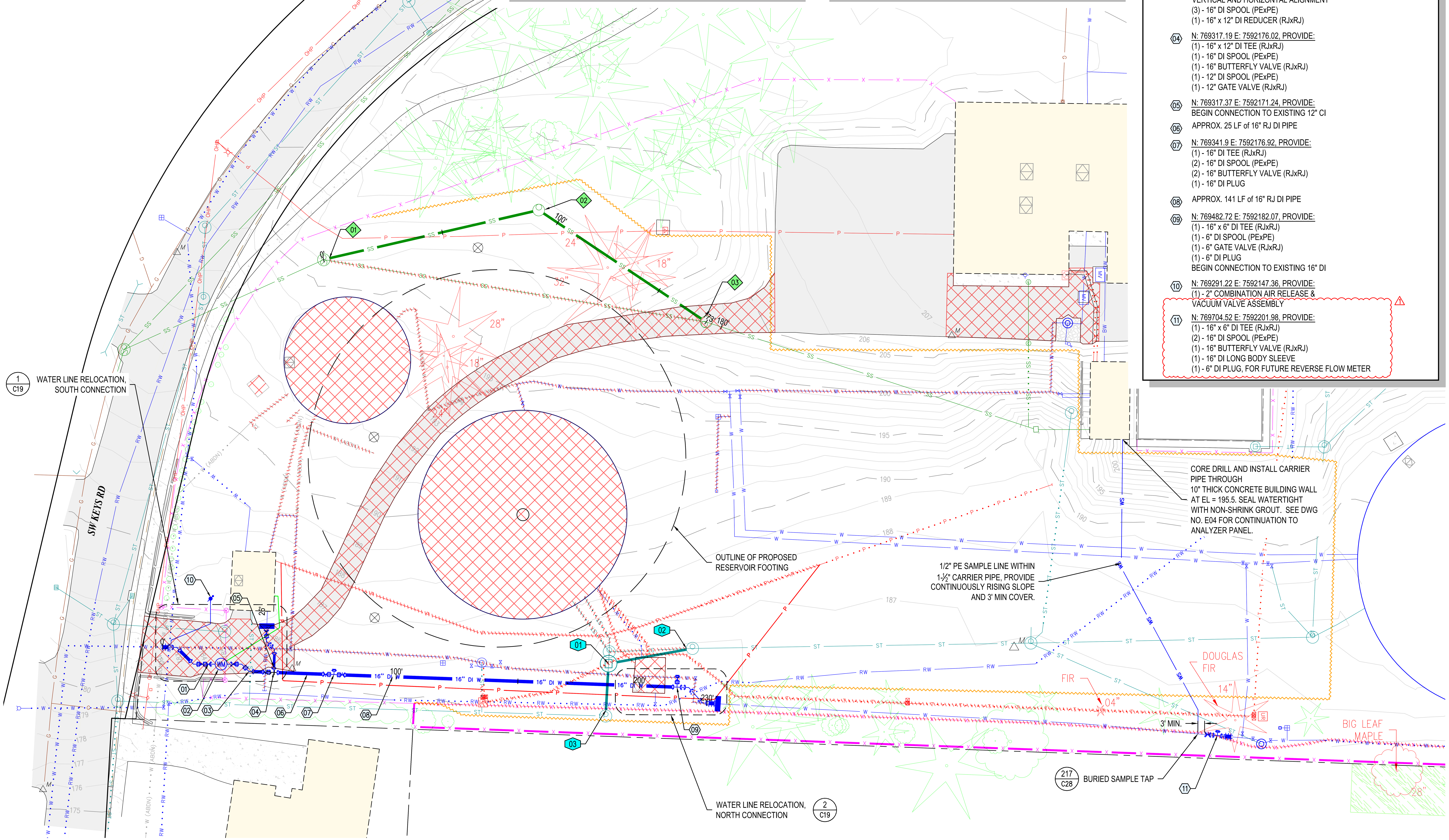
08 APPROX. 141 LF of 16" RJ DI PIPE

09 N: 769482.72 E: 7592182.07, PROVIDE:
(1) - 16" x 6" DI TEE (RJxRJ)
(1) - 6" DI SPOOL (PExPE)
(1) - 6" GATE VALVE (RJxRJ)
(1) - 6" DI PLUG
BEGIN CONNECTION TO EXISTING 16" DI

10 N: 769291.22 E: 7592147.36, PROVIDE:
(1) - 2" COMBINATION AIR RELEASE & VACUUM VALVE ASSEMBLY

1

11 N: 769704.52 E: 7592201.98, PROVIDE:
(1) - 16" x 6" DI TEE (RJxRJ)
(2) - 16" DI SPOOL (PExPE)
(1) - 16" BUTTERFLY VALVE (RJxRJ)
(1) - 16" DI LONG BODY SLEEVE
(1) - 6" DI PLUG, FOR FUTURE REVERSE FLOW METER



UTILITY RELOCATION PLAN

1" = 20'

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW
EXPIRES: 12/31/2025
SIGNED: 06/05/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR
UTILITY RELOCATION PLAN
ADDENDUM NO. 2, ATTACHMENT 2

ENGINEER: JLC
REVIEWED: JRB
SAVE DATE: Jun 27, 2024
PLOT DATE: Jun 27, 2024
CLIENT: SCAP
FILENAME: KEYS-P-UTIL.DWG
JOB NO.: 230-093

REVISIONS

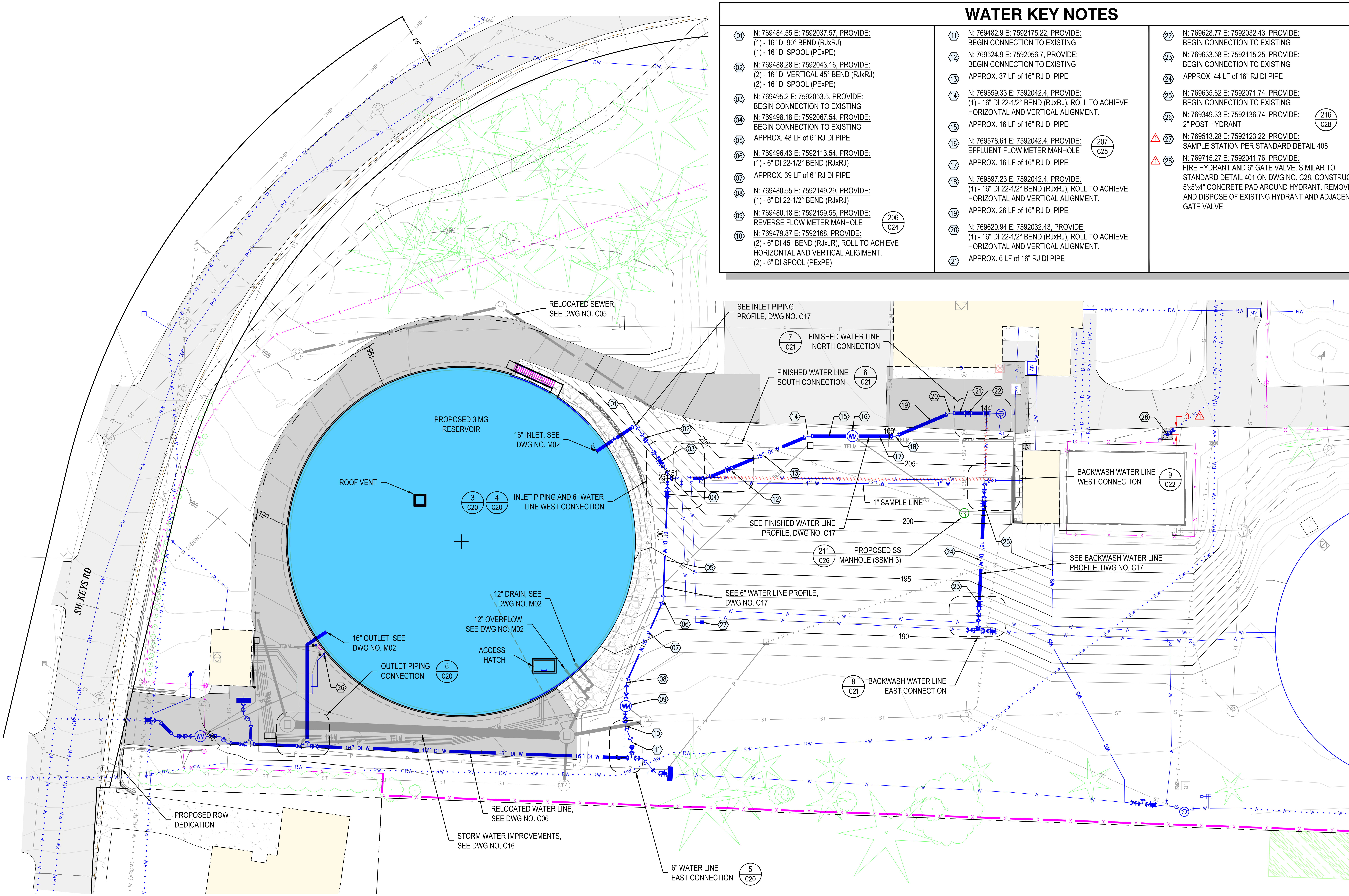
NO.	DATE	DESCRIPTION	BY	REVIEW
1	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

SCALE: SHOWN
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C06
SHEET NO.: 08 / 68

WATER KEY NOTES

01	N: 769484.55 E: 7592037.57, PROVIDE: (1) - 16" DI 90° BEND (RJxRJ) (1) - 16" DI SPOOL (PExPE)
02	N: 769488.28 E: 7592043.16, PROVIDE: (2) - 16" DI VERTICAL 45° BEND (RJxRJ) (2) - 16" DI SPOOL (PExPE)
03	N: 769495.2 E: 7592053.5, PROVIDE: BEGIN CONNECTION TO EXISTING
04	N: 769498.18 E: 7592067.54, PROVIDE: BEGIN CONNECTION TO EXISTING
05	APPROX. 48 LF of 6" RJ DI PIPE
06	N: 769496.43 E: 7592113.54, PROVIDE: (1) - 6" DI 22-1/2° BEND (RJxRJ)
07	APPROX. 39 LF of 6" RJ DI PIPE
08	N: 769480.55 E: 7592149.29, PROVIDE: (1) - 6" DI 22-1/2° BEND (RJxRJ)
09	N: 769480.18 E: 7592159.55, PROVIDE: REVERSE FLOW METER MANHOLE (206 / C24)
10	N: 769479.87 E: 7592168, PROVIDE: (2) - 6" DI 45° BEND (RJxJR), ROLL TO ACHIEVE HORIZONTAL AND VERTICAL ALIGIMENT. (2) - 6" DI SPOOL (PExPE)
11	N: 769482.9 E: 7592175.22, PROVIDE: BEGIN CONNECTION TO EXISTING
12	N: 769524.9 E: 7592056.7, PROVIDE: BEGIN CONNECTION TO EXISTING
13	APPROX. 37 LF of 16" RJ DI PIPE
14	N: 769559.33 E: 7592042.4, PROVIDE: (1) - 16" DI 22-1/2° BEND (RJxRJ), ROLL TO ACHIEVE HORIZONTAL AND VERTICAL ALIGNMENT.
15	APPROX. 16 LF of 16" RJ DI PIPE
16	N: 769578.61 E: 7592042.4, PROVIDE: EFFLUENT FLOW METER MANHOLE (207 / C25)
17	APPROX. 16 LF of 16" RJ DI PIPE
18	N: 769597.23 E: 7592042.4, PROVIDE: (1) - 16" DI 22-1/2° BEND (RJxRJ), ROLL TO ACHIEVE HORIZONTAL AND VERTICAL ALIGNMENT.
19	APPROX. 26 LF of 16" RJ DI PIPE
20	N: 769620.94 E: 7592032.43, PROVIDE: (1) - 16" DI 22-1/2° BEND (RJxRJ), ROLL TO ACHIEVE HORIZONTAL AND VERTICAL ALIGNMENT.
21	APPROX. 6 LF of 16" RJ DI PIPE
22	N: 769628.77 E: 7592032.43, PROVIDE: BEGIN CONNECTION TO EXISTING
23	N: 769633.58 E: 7592115.25, PROVIDE: BEGIN CONNECTION TO EXISTING
24	APPROX. 44 LF of 16" RJ DI PIPE
25	N: 769635.62 E: 7592071.74, PROVIDE: BEGIN CONNECTION TO EXISTING
26	N: 769349.33 E: 7592136.74, PROVIDE: 2" POST HYDRANT (216 / C28)
27	N: 769513.28 E: 7592123.22, PROVIDE: SAMPLE STATION PER STANDARD DETAIL 405
28	N: 769715.27 E: 7592041.76, PROVIDE: FIRE HYDRANT AND 6" GATE VALVE, SIMILAR TO STANDARD DETAIL 401 ON DWG NO. C28. CONSTRUCT 5'x5'x4" CONCRETE PAD AROUND HYDRANT. REMOVE AND DISPOSE OF EXISTING HYDRANT AND ADJACENT GATE VALVE.



PROPOSED UTILITY PLAN

1" = 20'

RH2

REGISTERED PROFESSIONAL ENGINEER 94740 OREGON MARCH 12, 2018 JUSTIN R. BARROW

EXPIRES: 12/31/2025
SIGNED: 06/05/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED UTILITY PLAN
ADDENDUM NO. 2, ATTACHMENT 2

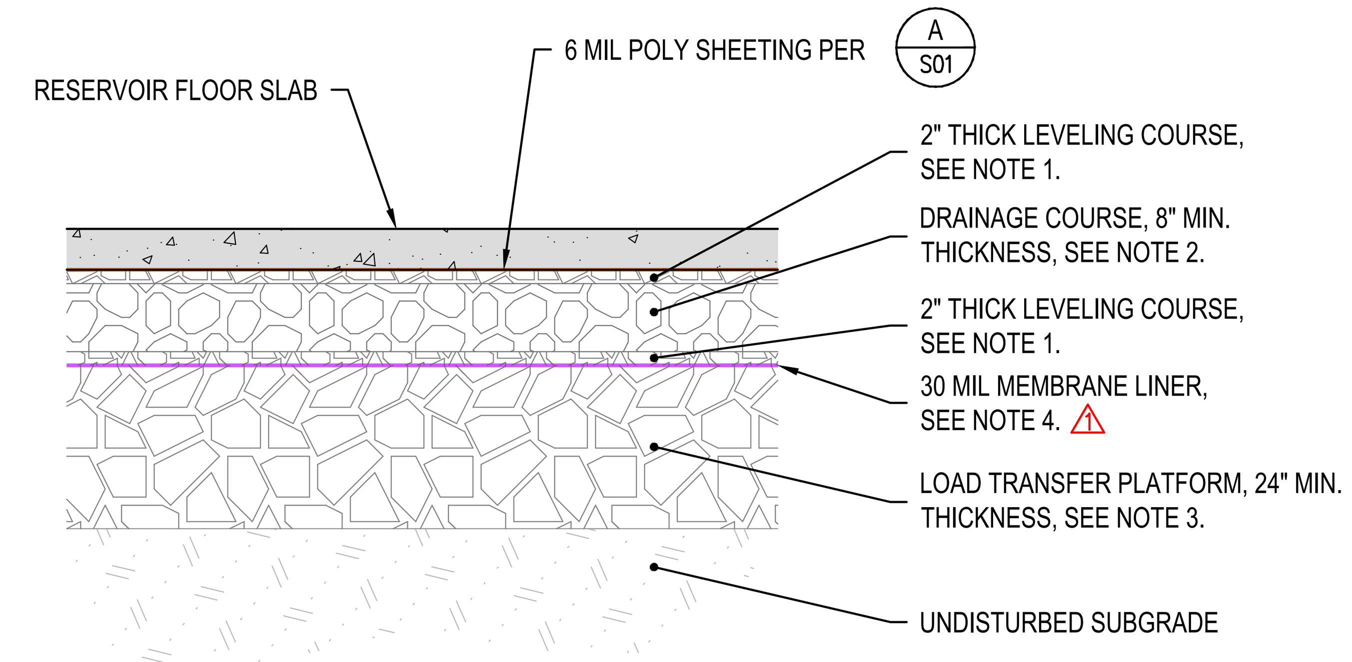
REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
2	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

ENGINEER: JLC
REVIEWED: JRB
SAVE DATE: Jun 27, 2024
PLOT DATE: Jun 27, 2024
CLIENT: SCAP
FILENAME: KEYS-P-SITEP.DWG
JOB NO.: 230-093

SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C15
SHEET NO.: 17 / 68

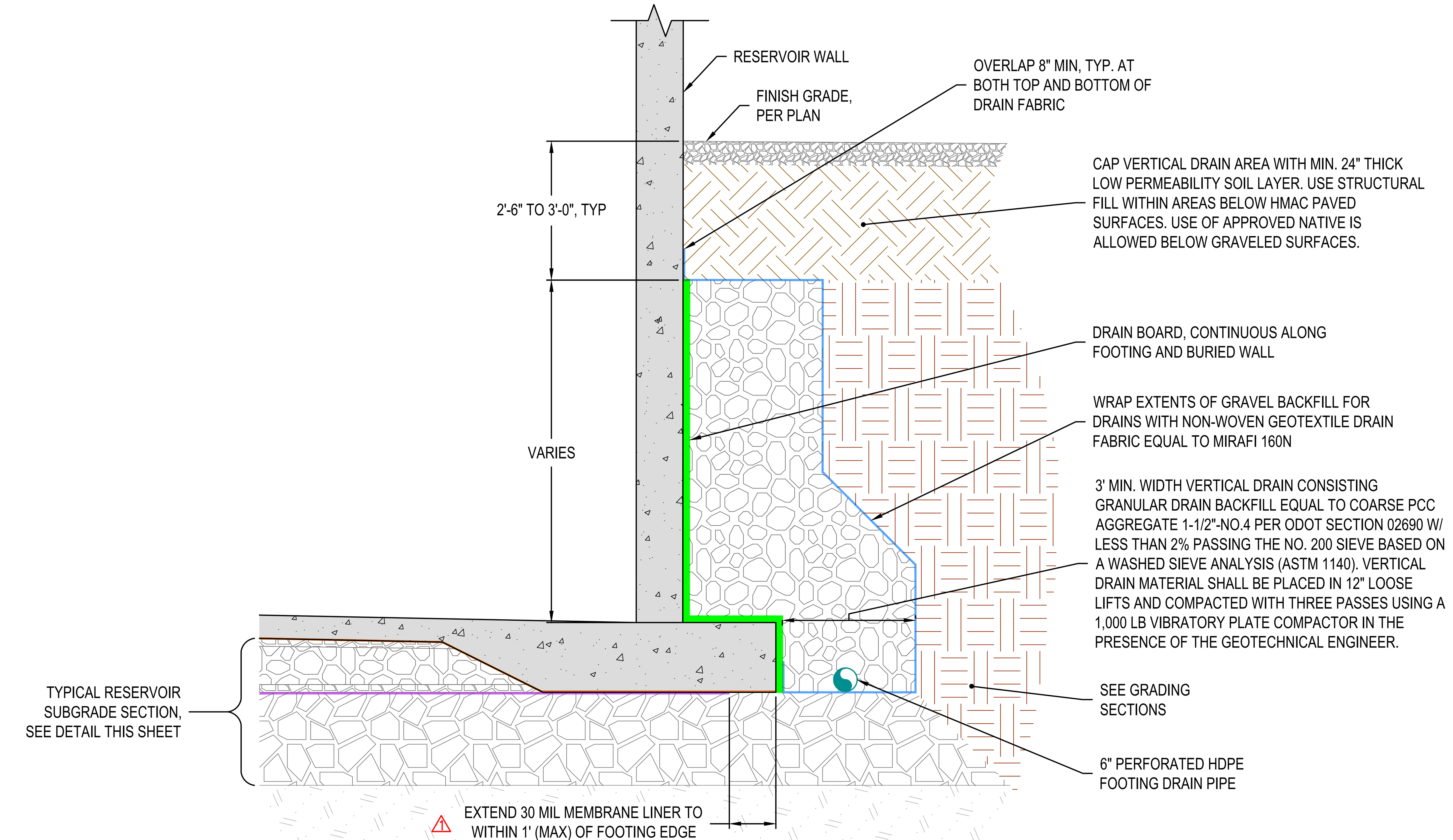


RESERVOIR SUBGRADE NOTES:

1) LEVELING COURSES SHALL BE 3/4" -0" DENSE GRADED AGGREGATE PER ODOT SECTION 02630. PLACEMENT OF COURSES SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER. PLACE TOP AND BOTTOM LEVELING COURSES IN SINGLE 2-INCH LIFTS. TOP LEVELING COURSE: PROOF ROLL WITH SELF-PROPELLED COMPACTION EQUIPMENT WEIGHING AT LEAST 10 TONS WITH A MINIMUM OF TWO VIBRATORY COVERAGES FOLLOWED BY TWO COVERAGES WITH EQUIPMENT IN STATIC MODE. BOTTOM LEVELING COURSE: PROOF ROLL WITH SELF-PROPELLED COMPACTION EQUIPMENT WEIGHING AT LEAST 10 TONS WITH A MINIMUM OF FOUR COVERAGES WITH EQUIPMENT IN STATIC MODE. DO NOT USE VIBRATORY COMPACTION ON BOTTOM LEVELING COURSE. PLACEMENT OF LEVELING COURSE MATERIAL SHALL BE DONE IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER.
2) DRAINAGE COURSE MATERIAL SHALL BE EQUAL TO COARSE PCC AGGREGATE 1-1/2"-NO.4 PER ODOT SECTION 02690 W/ LESS THAN 2% PASSING THE NO. 200 SIEVE BASED ON A WASHED SIEVE ANALYSIS (ASTM 1140). DRAIN COURSE MATERIAL SHALL BE PLACED IN A SINGLE LOOSE LIFT. PROOF ROLL WITH SELF-PROPELLED COMPACTION EQUIPMENT WEIGHING AT LEAST 10 TONS WITH A MINIMUM OF TWO VIBRATORY COVERAGES FOLLOWED BY TWO COVERAGES WITH EQUIPMENT IN STATIC MODE. PLACEMENT OF DRAINAGE COURSE MATERIAL SHALL BE DONE IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER. AT THE OPTION OF THE CONTRACTOR, THE BOTTOM LEVELING COURSE MAY BE ELIMINATED IF THE TOP COURSE THICKNESS IS INCREASED TO 4".
3) LOAD TRANSFER PLATFORM SHALL BE IMPORTED CRUSHED ROCK COMPACTED TO 95% OF MDD IN ACCORDANCE WITH ASTM D1557.
4) 30 MIL LINER SHALL BE A LINEAR LOW DENSITY POLYETHYLENE (LLDPE) LINER WITH WATERPROOF SEAMS AS REQUIRED TO PROVIDE A CONTINUOUS DRAINAGE BARRIER UNDER THE RESERVOIR FOOTPRINT. PROTECT LINER FROM AGGREGATE WITH A LAYER OF TENCATE MIRAFI 1100N GEOTEXTILE (OR EQUAL) DIRECTLY BELOW THE LINER.

RESERVOIR SUBGRAGE DETAIL 201/C12

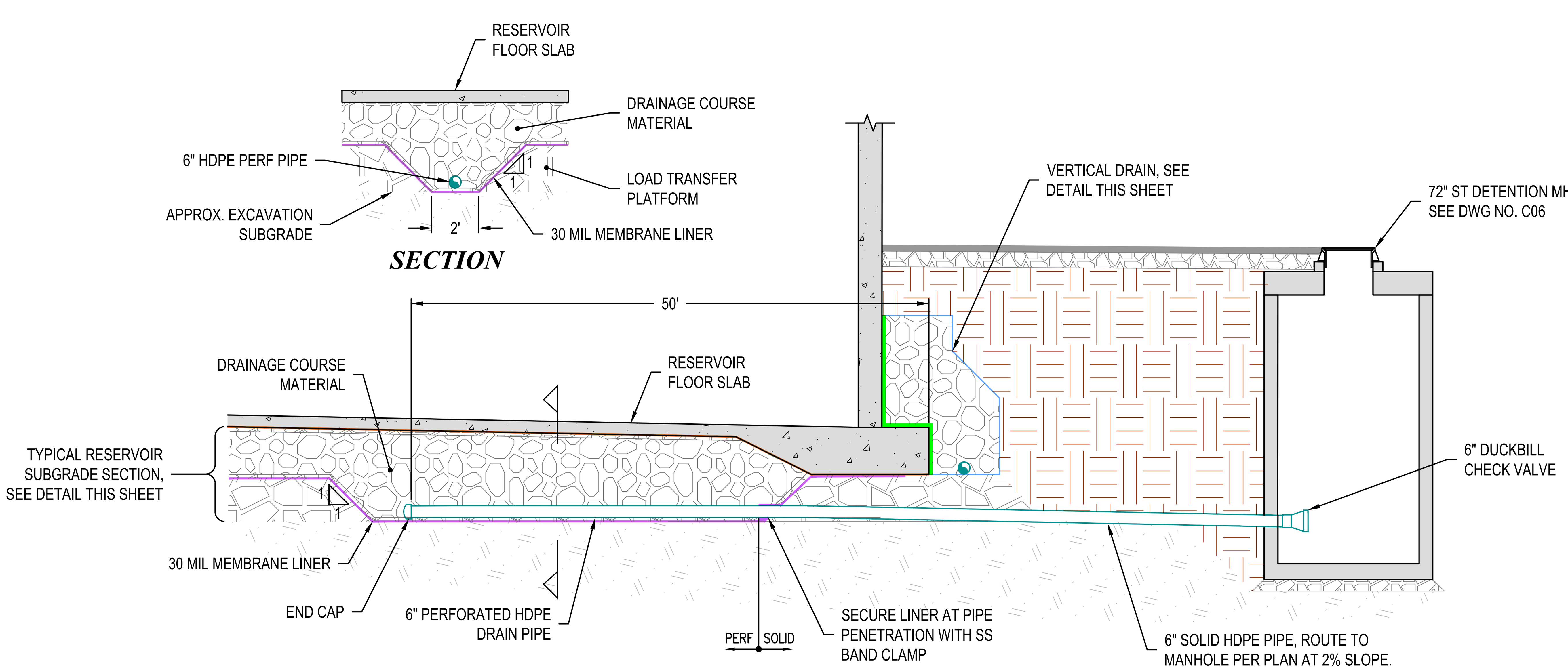
NOT TO SCALE



NOTE: FOOTING DRAIN PIPE SHALL BE SINGLE-WALL CORRUGATED HDPE PIPE MEETING THE CELL CLASSIFICATION AND MATERIAL PERFORMANCE REQUIREMENTS OF AASHTO M252. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND MANUFACTURER GUIDELINES. PERFORATION PATTERN SHALL BE AASHTO M252 CLASS II.

VERTICAL DRAIN DETAIL 202/C12

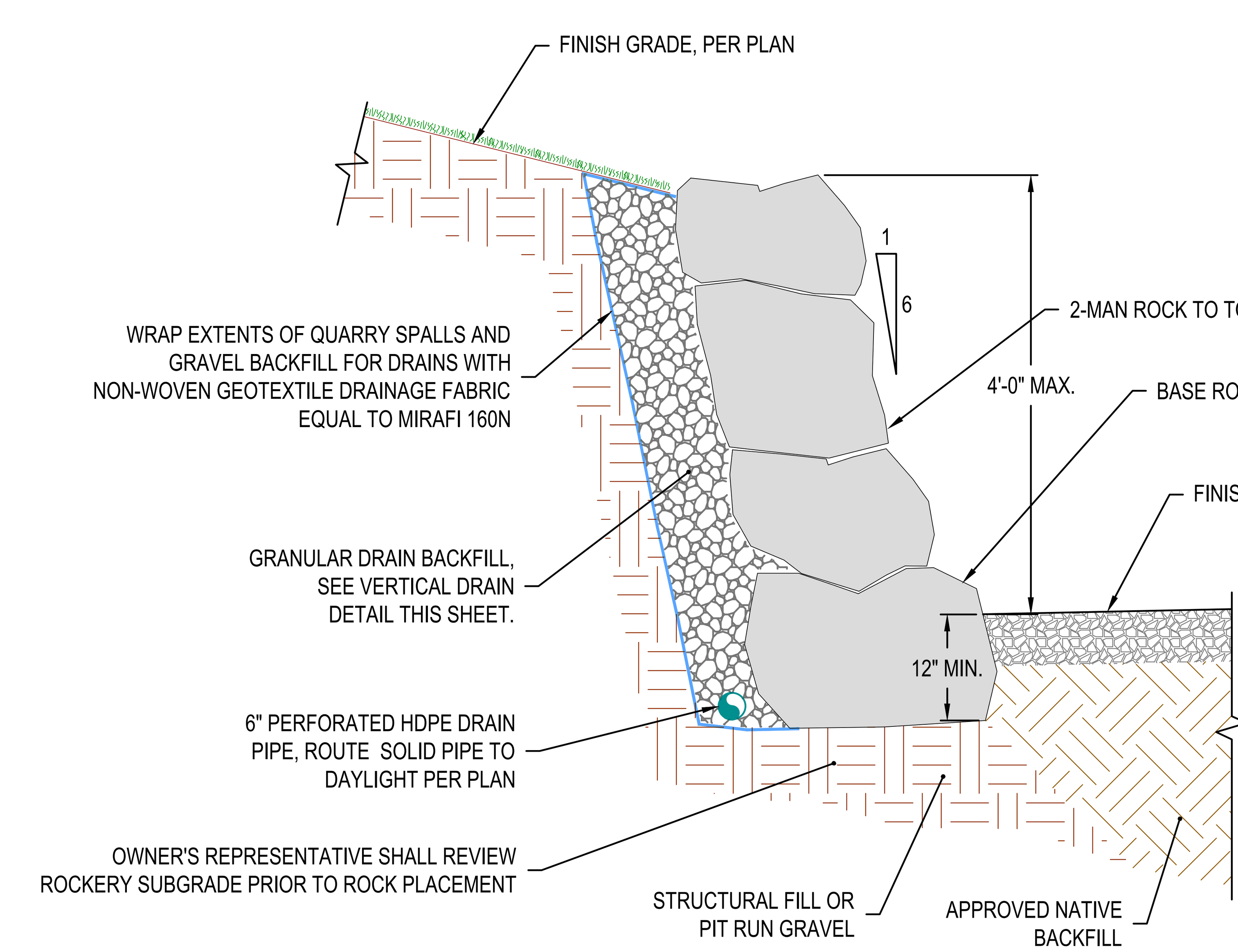
½" = 1'-0"



NOTE: RESERVOIR SUBGRADE DRAIN PIPE SHALL BE DUAL-WALL CORRUGATED HDPE PIPE MEETING THE CELL CLASSIFICATION AND MATERIAL PERFORMANCE REQUIREMENTS OF AASHTO M252. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND MANUFACTURER GUIDELINES. PERFORATION PATTERN SHALL BE AASHTO M252 CLASS II.

RESERVOIR SUBGRADE DRAIN DETAIL 203/C16

NOT TO SCALE



NOTE: WALL DRAIN PIPE SHALL BE SINGLE-WALL CORRUGATED HDPE PIPE MEETING THE CELL CLASSIFICATION AND MATERIAL PERFORMANCE REQUIREMENTS OF AASHTO M252. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND MANUFACTURER GUIDELINES. PERFORATION PATTERN SHALL BE AASHTO M252 CLASS II.

ROCKERY DETAIL 204/C11

NOT TO SCALE

RH2

REGISTERED PROFESSIONAL ENGINEER 94740 OREGON MARCH 12, 2019 JUSTIN R. BARROW

EXPIRES: 12/31/2025
SIGNED: 06/05/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

SITE AND UTILITY DETAILS 1
ADDENDUM NO. 2, ATTACHMENT 2

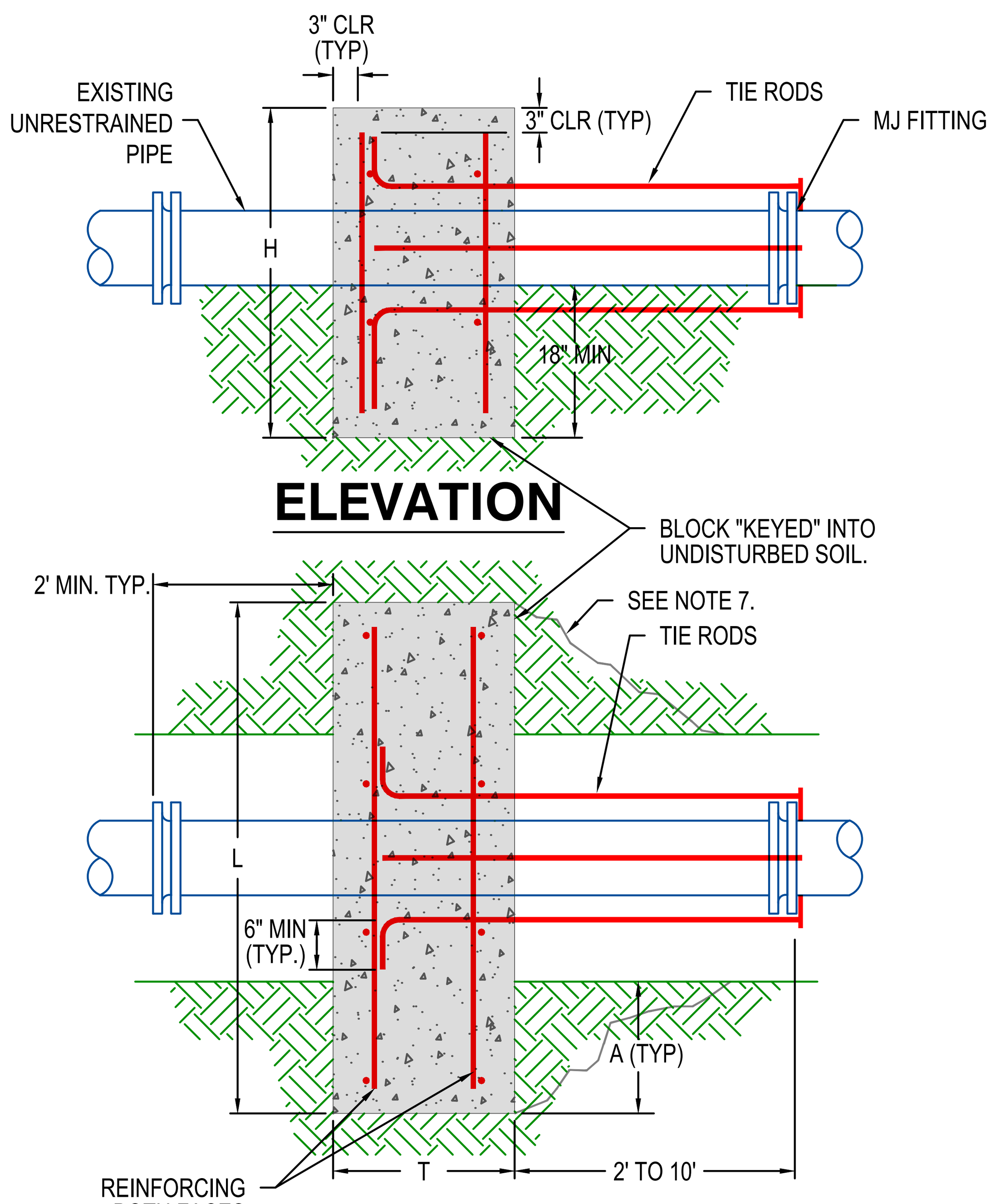
ENGINEER: JLC | REVIEWED: JRB | SAVE DATE: Jun 27, 2024 | PLOT DATE: Jun 27, 2024 | CLIENT: SCAP | FILENAME: KEYS-P-CIVIL_DET.DWG | JOB NO.: 230-093

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
2	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

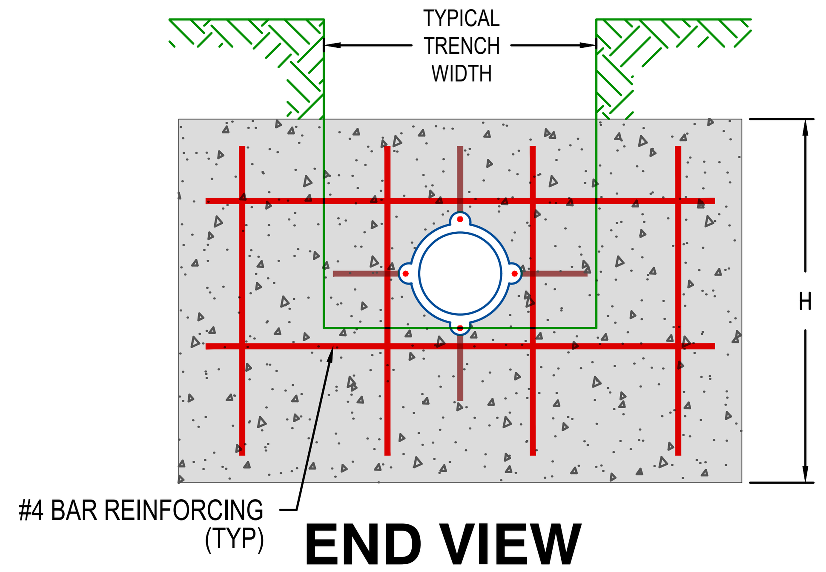
SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C23 | SHEET NO.: 25 / 68



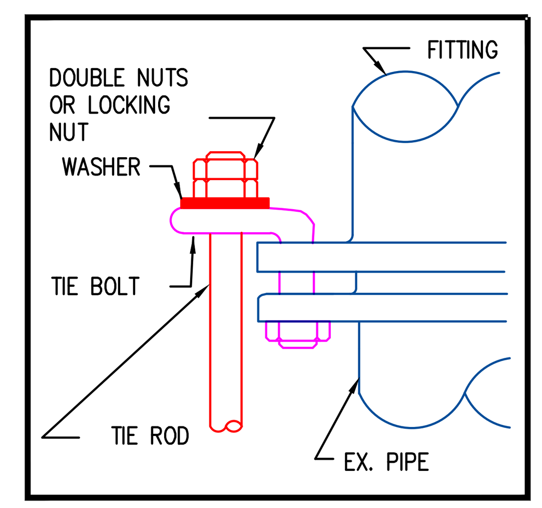
ELEVATION

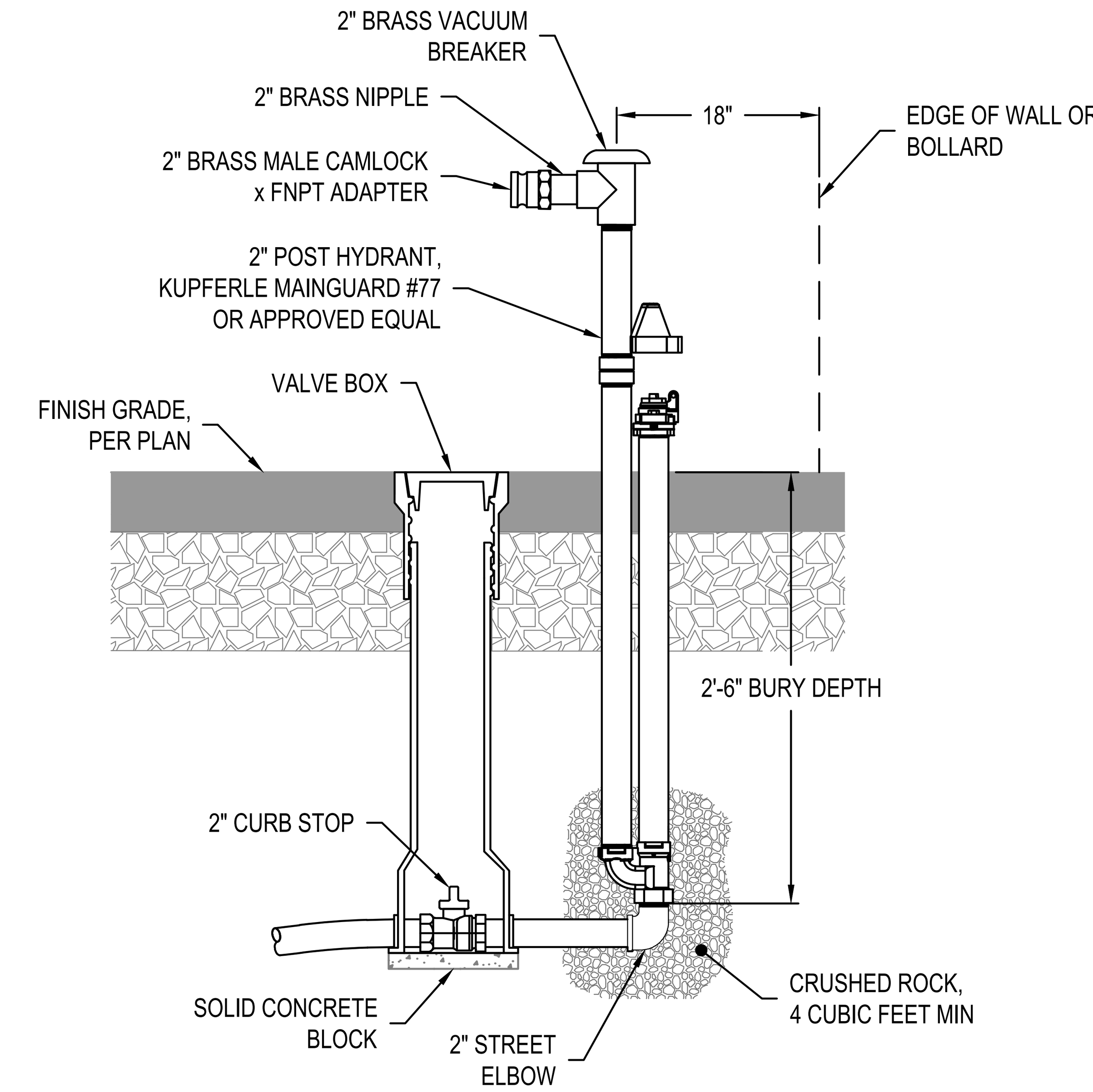
PLAN VIEW



END VIEW

ATTACHMENT DETAIL

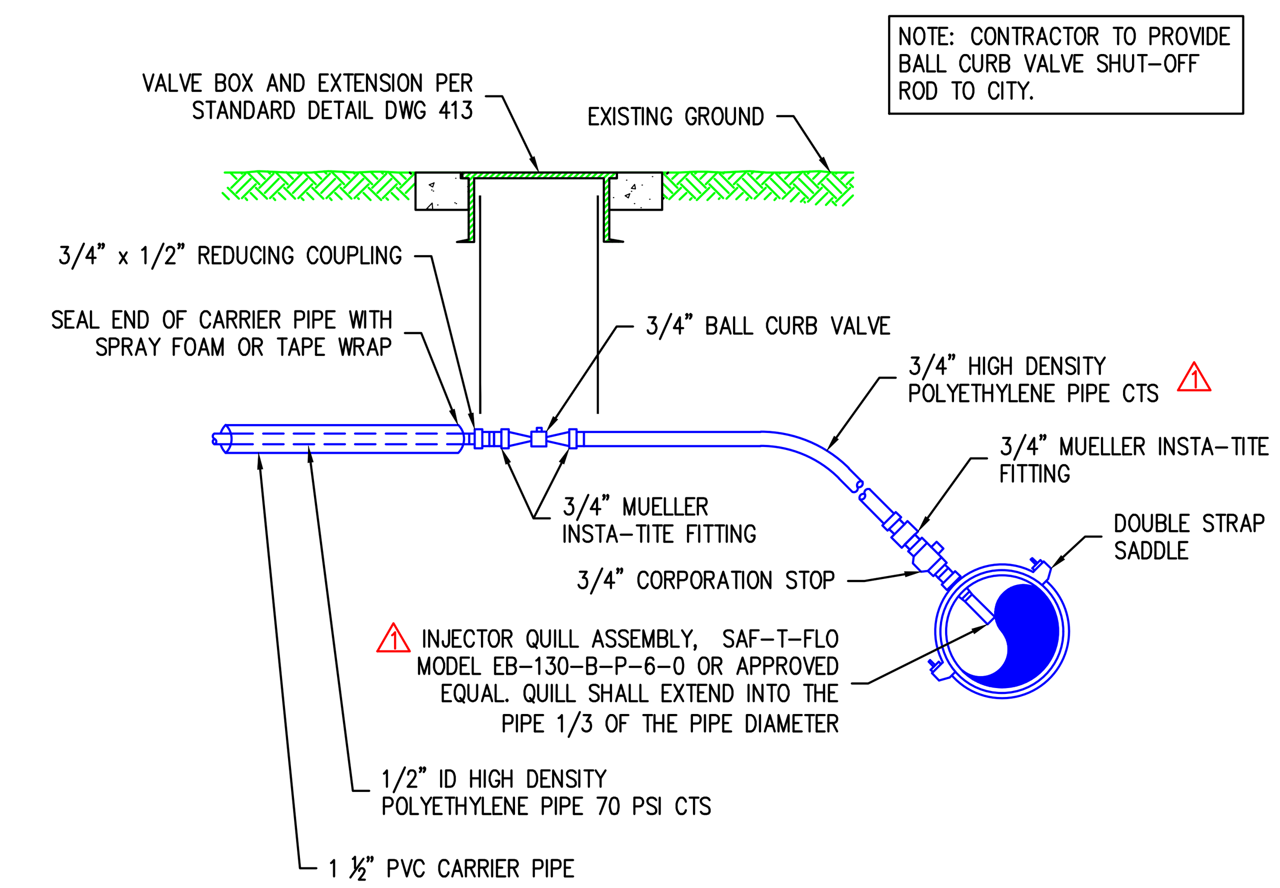




POST HYDRANT DETAIL

NOT TO SCALE

216
C15



BURIED SAMPLE TAP DETAIL

NOT TO SCALE

217
C06

SIZING TABLE

PIPE DIA	T (MIN)	H (MIN)	A (MIN)	REINFORCING	NUMBER OF RODS PER JOINT 5/8" DIA. ROD	3/4" DIA. ROD
4" AND 6"	18"	36"	12"	#4 @ 10" OC EW	2	2
8"	18"	42"	12"	#4 @ 12" OC EW	4	3
10"	24"	52"	12"	#4 @ 12" OC EW	6	4
12"	24"	54"	18"	#4 @ 8" OC EW	8	6
14"	24"	56"	18"	#4 @ 6" OC EW	10	7
16"	30"	58"	18"	#4 @ 5" OC EW	12	8

MIN. BLOCK LENGTH (L)

	SOIL CONDITION		
PIPE DIA	SOFT CLAY	SILT	SANDY SILT
4" AND 6"	54"	48"	48"
8"	80"	66"	48"
10"	98"	78"	54"
12"	SEE NOTE 6	92"	66"
14"	SEE NOTE 6	114"	78"
16"	SEE NOTE 6	144"	94"

NOTE: THIS DETAIL FOR PIPE TEST PRESSURES UP TO 200 PSI

NOTES

1. CONCRETE BLOCK SHALL BE CLASS 3000 PSI CONCRETE (MIN.) WITH 3/4" AGGREGATE AND SLUMP OF 2"-4".

2. MAINTAIN 18" MINIMUM COVER OVER THE TOP OF BLOCK.

3. BOTTOM OF BLOCK IS TO BE ON UNDISTURBED SOIL. DO NOT INSTALL BLOCK ON PIPE JOINT.

4. TRENCH TO BE BACKFILLED WITH CRUSHED ROCK COMPACTED TO 95% DENSITY ON ALL SIDES OF BLOCK AND A DISTANCE OF 4' MIN. IN FRONT OF BLOCK TO TOP OF BLOCK.

5. CONCRETE SHALL ACHIEVE AT LEAST 2700 PSI COMPRESSIVE STRENGTH AND (FOR ELASTICITY) HAVE CURED FOR AT LEAST 7 DAYS BEFORE PRESSURE TESTING OF CONNECTION.

6. FOR SOIL CONDITIONS NOT SHOWN, BLOCK IS TO BE DESIGNED BY OWNER'S REPRESENTATIVE.

7. IF BLOCK CANNOT BE KEYED INTO UNDISTURBED SOIL TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, a) THE BLOCK LENGTH SHALL BE EXTENDED TO PROVIDE AN ADEQUATE KEY OR
b) THE TRENCH SHALL BE BACKFILLED AND COMPACTED TO 95% DENSITY A MINIMUM DISTANCE EQUAL TO NOMINAL PIPE SIZE NUMBER, BUT AS FEET (EXAMPLE: A 10" PIPE WOULD REQUIRE 10' OF BACKFILL) IN FRONT OF THE BLOCK TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BEFORE PRESSURIZING.

TIE ROD GENERAL NOTES

1) WHERE EXISTING PIPE IS CAST IRON, USE TIE RODS AS SHOWN. WHERE EXISTING IS UNRESTRAINED DUCTILE IRON, INSTALL OPPOSED RESTRAINT GLANDS WRAPPED IN POLYWRAP CENTERED IN BLOCK.

1) ALL TIE RODS, TIE ROD COUPLINGS, TIE BOLTS, NUTS, WASHERS, FLANGE LUGS AND ANY OTHER METALLIC TIE ROD SYSTEM COMPONENT SHALL BE ASTM A242 (COR-TEN) STEEL. MILD STEEL IS NOT ALLOWED.
PROTECT TIE RODS, ROD COUPLINGS, AND TIE BOLTS/FLANGE LUGS WITH WAX TAPE COATING SYSTEM. WAX TAPE THE TIE RODS PRIOR TO POURING THE CONCRETE. EXTEND POLYETHYLENE WRAP FROM CONNECTION, OVER THE TIE RODS, TO THE FACE OF BLOCK.

2) TIE RODS SHALL BE "ALL THREAD" ROD.

3) TIE RODS SHALL HAVE "NATIONAL-COARSE" THREAD WITH EITHER TWO NUTS OR ONE SELF-LOCKING NUT.

4) TIE RODS SHALL BE ASSEMBLED SYMMETRICALLY ABOUT EACH JOINT (IF AN EVEN NUMBER OF RODS ARE USED THEN EACH ROD SHALL HAVE A ROD LOCATED ON THE DIRECT OPPOSITE SIDE OF JOINT. IF 3 OR 6 RODS ARE USED THEN AN EQUAL NUMBER OF UNSHACKLED BOLT HOLES SHALL BE LEFT BETWEEN ANY TWO TIE RODS.)

5) TIE ROD NUTS SHALL BE TIGHTENED UNIFORMLY AT EACH JOINT. DO NOT OVER TIGHTEN; HAND SNUG PLUS 1/2 TURN.

6) TIE ROD LENGTHS SHALL NOT EXCEED 10', UNLESS SPECIFICALLY SHOWN ON APPROVED PLANS.

7) TIE RODS SHALL BE ATTACHED TO MECHANICAL JOINTS WITH TIE BOLTS, EXCEPT FOR FIRE HYDRANT INSTALLATIONS WHICH SHALL USE TIE LUGS. TIE BOLTS SHALL BE ROMAC "90-DEGREE EYE BOLTS" OR APPROVED EQUAL. "DUC-LUGS" ARE NOT ALLOWED. FOR CONNECTION TO FLANGED FITTINGS, 3- HOLE FLANGE LUGS SHALL BE USED. TIE BOLTS AND FLANGE LUGS SHALL BE RATED FOR AT LEAST 7,500 LB EACH.

STRADDLE BLOCK

NOT TO SCALE

215
TYP.

NOTES: HYDRANTS TO BE MUELLER TRADITIONAL CENTURION HYDRANT WITH 5" STORZ ADAPTER

1. ~~HYDRANTS TO BE APPROVED BY CITY ENGINEER.~~

2. HYDRANT COLOR TO BE SHERWIN WILLIAMS GCC-5006.

3. ALL MJ'S ON TEE, VALVE & F.H. TO BE RESTRAINED WITH "MEGALUG" FOLLOWER GLANDS. RESTRAIN MIN 10' OF PIPE EACH SIDE OF TEE ON MAIN LINE. NO JOINTS BETWEEN VALVE AND SHOE UNLESS OVER 18'.

4. HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL

5. MIN. 4 CU. FT. OF 1 1/2"-3/4" CLEAN DRAIN ROCK SHALL BE PLACED AROUND SHOE UP TO A MIN. OF 6" ABOVE DRAIN OUTLETS.

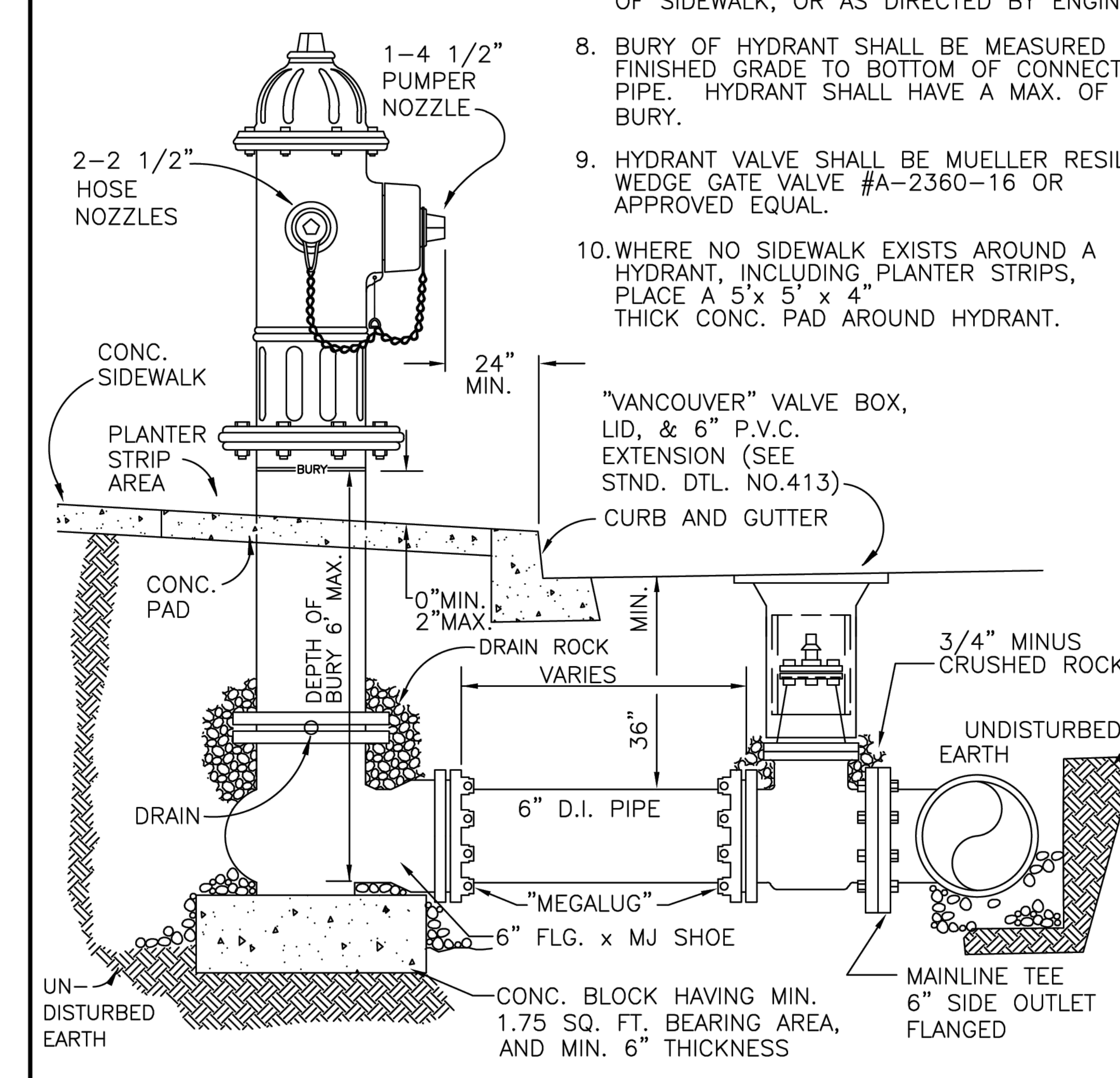
6. WHERE PLANTER STRIP EXISTS. HYDRANT SHALL BE PLACED SO FRONT PORT IS A MIN. OF 24" BEHIND FACE OF CURB.

7. WHERE INTEGRAL S/W & CURB EXIST, HYD. PUMPER PORT SHALL BE PLACED AT BACK OF SIDEWALK, OR AS DIRECTED BY ENGINEER.

8. BURY OF HYDRANT SHALL BE MEASURED FROM FINISHED GRADE TO BOTTOM OF CONNECTING PIPE. HYDRANT SHALL HAVE A MAX. OF A 6' BURY.

9. HYDRANT VALVE SHALL BE MUELLER RESILIENT WEDGE GATE VALVE #A-2360-16 OR APPROVED EQUAL.

10. WHERE NO SIDEWALK EXISTS AROUND A HYDRANT, INCLUDING PLANTER STRIPS, PLACE A 5'x 5' x 4" THICK CONC. PAD AROUND HYDRANT.



DRAWN	DRAWN	COMMUNITY DEVELOPMENT CITY OF SCAPPOOSE 34485 E. COLUMBIA AVENUE, PO BOX "P", CITY OF SCAPPOOSE, OR. 97056	SCALE N.T.S.
DIV.	DEPT		DATE 2002
REV. DATE APPR.		STANDARD FIRE HYDRANT ASSEMBLY	APPR.
			DWG. NO. 401

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2018
JUSTIN R. BARROW
EXPIRES: 12/31/2025
SIGNED: 06/05/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

SITE AND UTILITY DETAILS 6
ADDENDUM NO. 2, ATTACHMENT 2

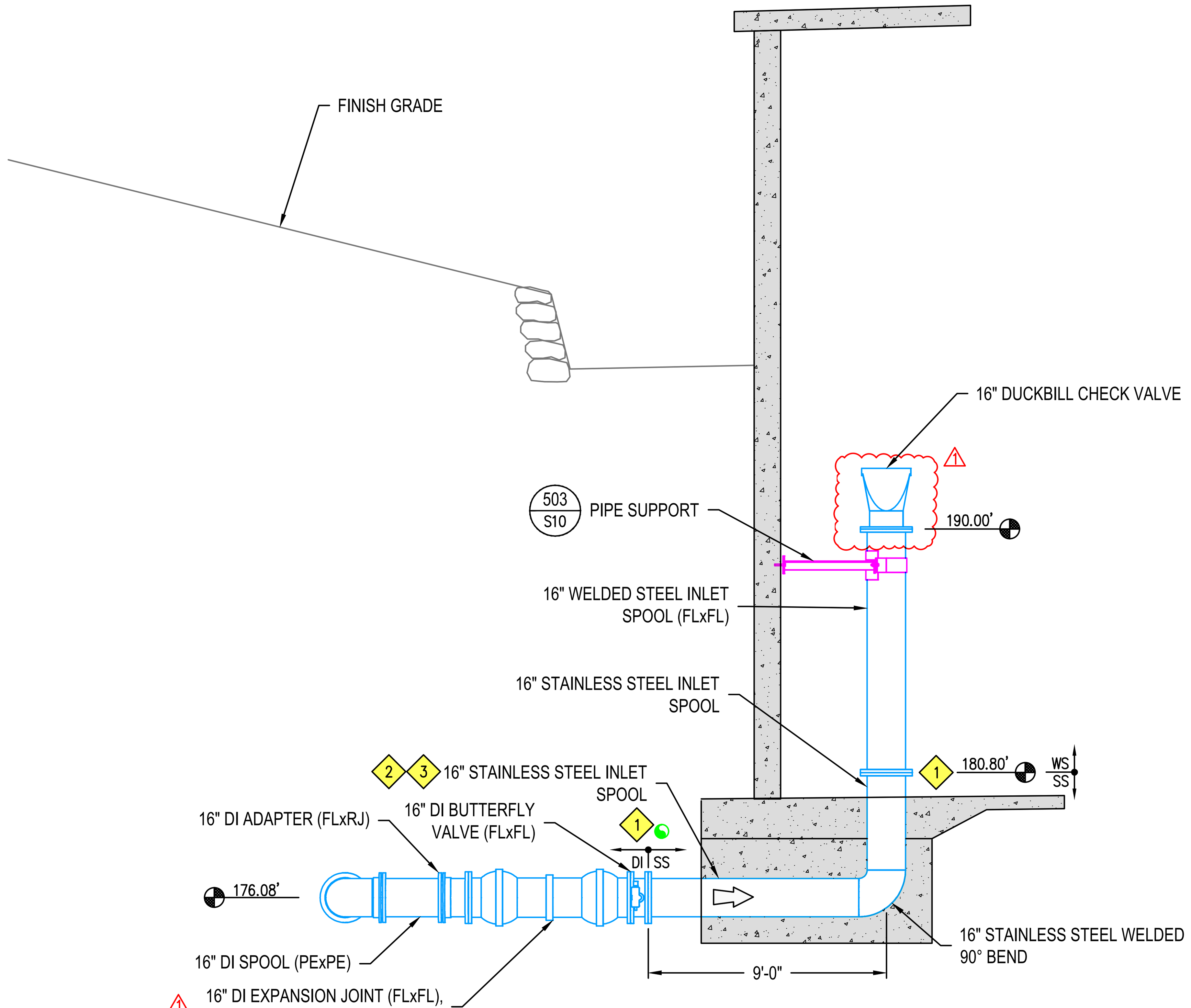
ENGINEER: JLC
REVIEWED: JRB
SAVE DATE: Jun 27, 2024
PLOT DATE: Jun 27, 2024
CLIENT: SCAP
FILENAME: KEYS-P-CIVIL_DET.DWG
JOB NO.: 230-093

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
1	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

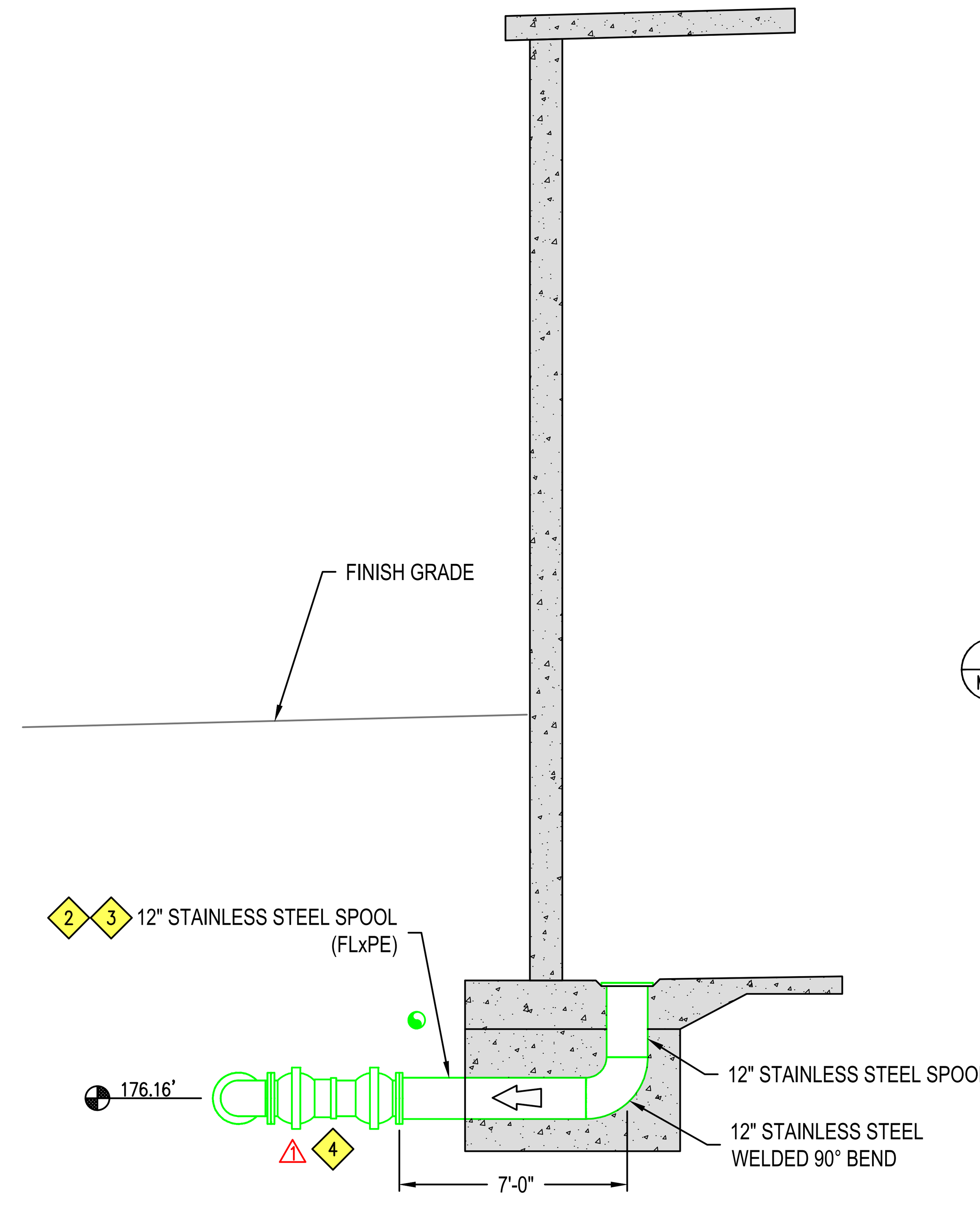
SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C28
SHEET NO.: 30
68



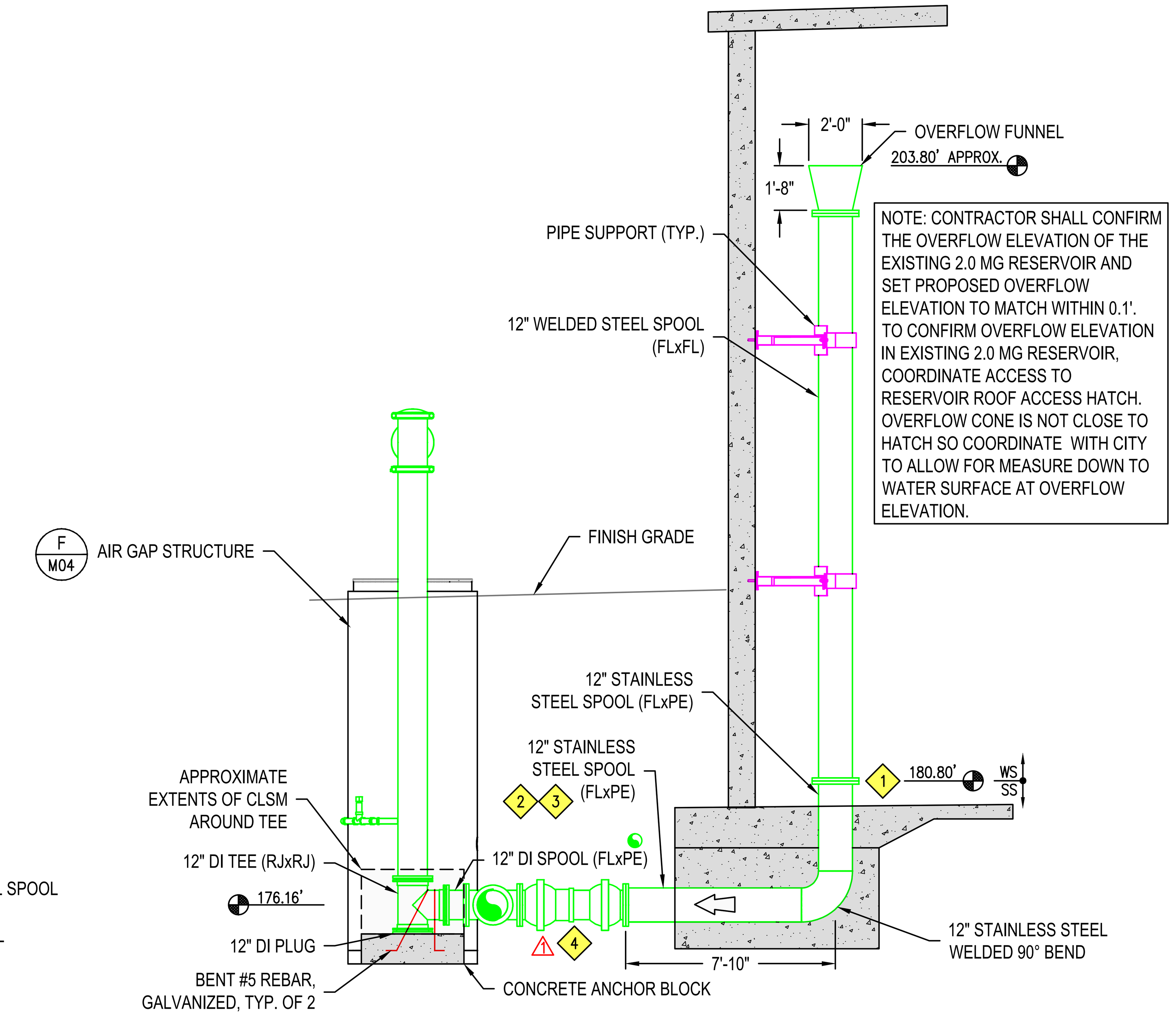
INLET PIPE ELEVATION (A M01)

¼" = 1'-0"



DRAIN PIPE ELEVATION (B M01)

¼" = 1'-0"

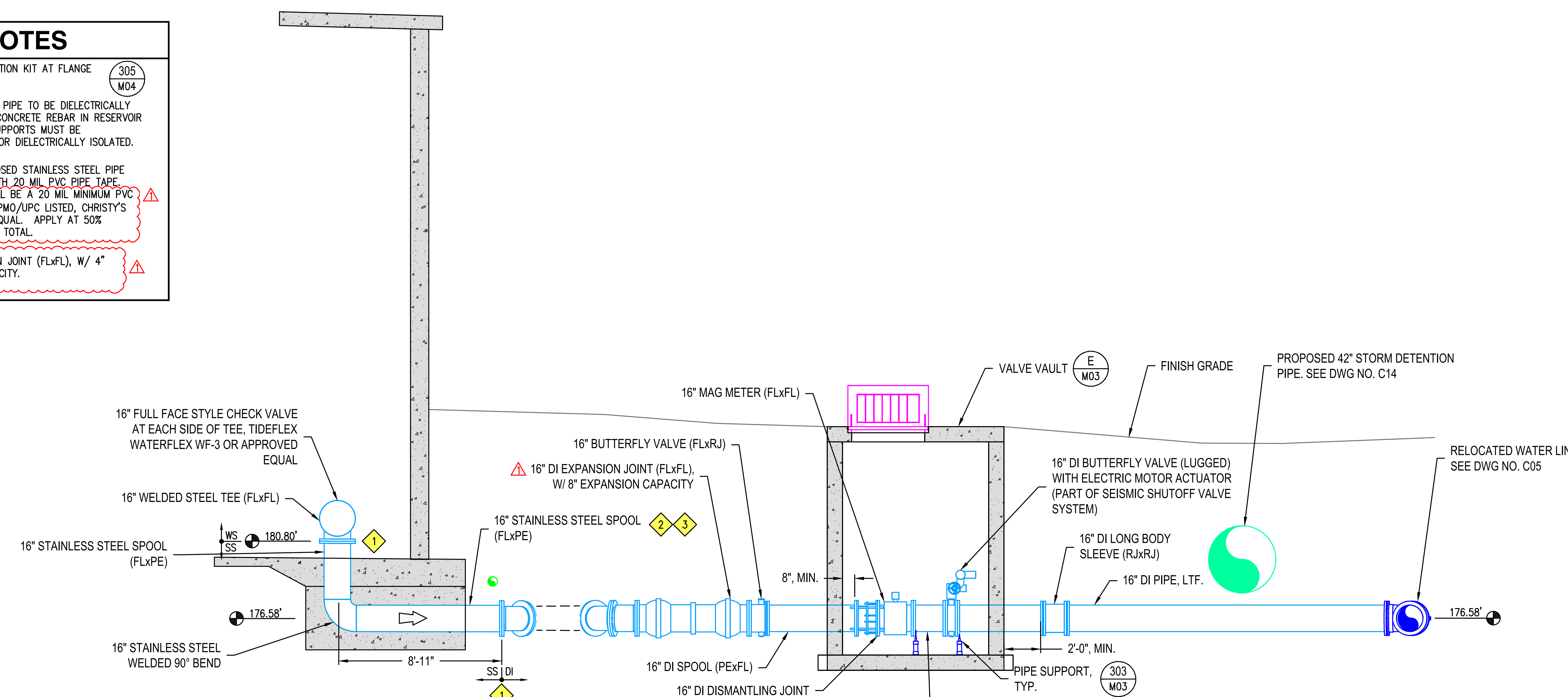


OVERFLOW PIPE ELEVATION (C M01)

¼" = 1'-0"

KEY NOTES

1. DIELECTRIC ISOLATION KIT AT FLANGE CONNECTION. (305 M04)
2. STAINLESS STEEL PIPE TO BE DIELECTRICALLY ISOLATED FROM CONCRETE REBAR IN RESERVOIR FOOTING. PIPE SUPPORTS MUST BE NONCONDUCTIVE OR DIELECTRICALLY ISOLATED.
3. TAPE WRAP EXPOSED STAINLESS STEEL PIPE AND FLANGES WITH 20 MIL PVC PIPE TAPE. TAPE WRAP SHALL BE A 20 MIL MINIMUM PVC TAPE THAT IS IAPMO/UPC LISTED, CHRISTY'S PIPE WRAP OR EQUAL. APPLY AT 50% OVERLAP, 40 MIL TOTAL.
4. 12" DI EXPANSION JOINT (FLxFL), W/ 4" EXPANSION CAPACITY.



OUTLET PIPE ELEVATION (D M01)

¼" = 1'-0"

RH2

REGISTERED PROFESSIONAL ENGINEER 94740 OREGON MARCH 12, 2019 JUSTIN R. BARROW

EXPIRES: 12/31/2025

SIGNED: 06/05/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

MECHANICAL SECTIONS
ADDENDUM NO. 2, ATTACHMENT 2

ENGINEER: JLC | SAVE DATE: Jun 27, 2024 | CLIENT: SCAP | JOB NO.: 230-093

REVIEWED: JRB | PLOT DATE: Jun 27, 2024 | FILENAME: KEYS-P-M01.DWG

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
1	6/27/2024	REVISED PER ADDENDUM NO. 2	JRB	EH

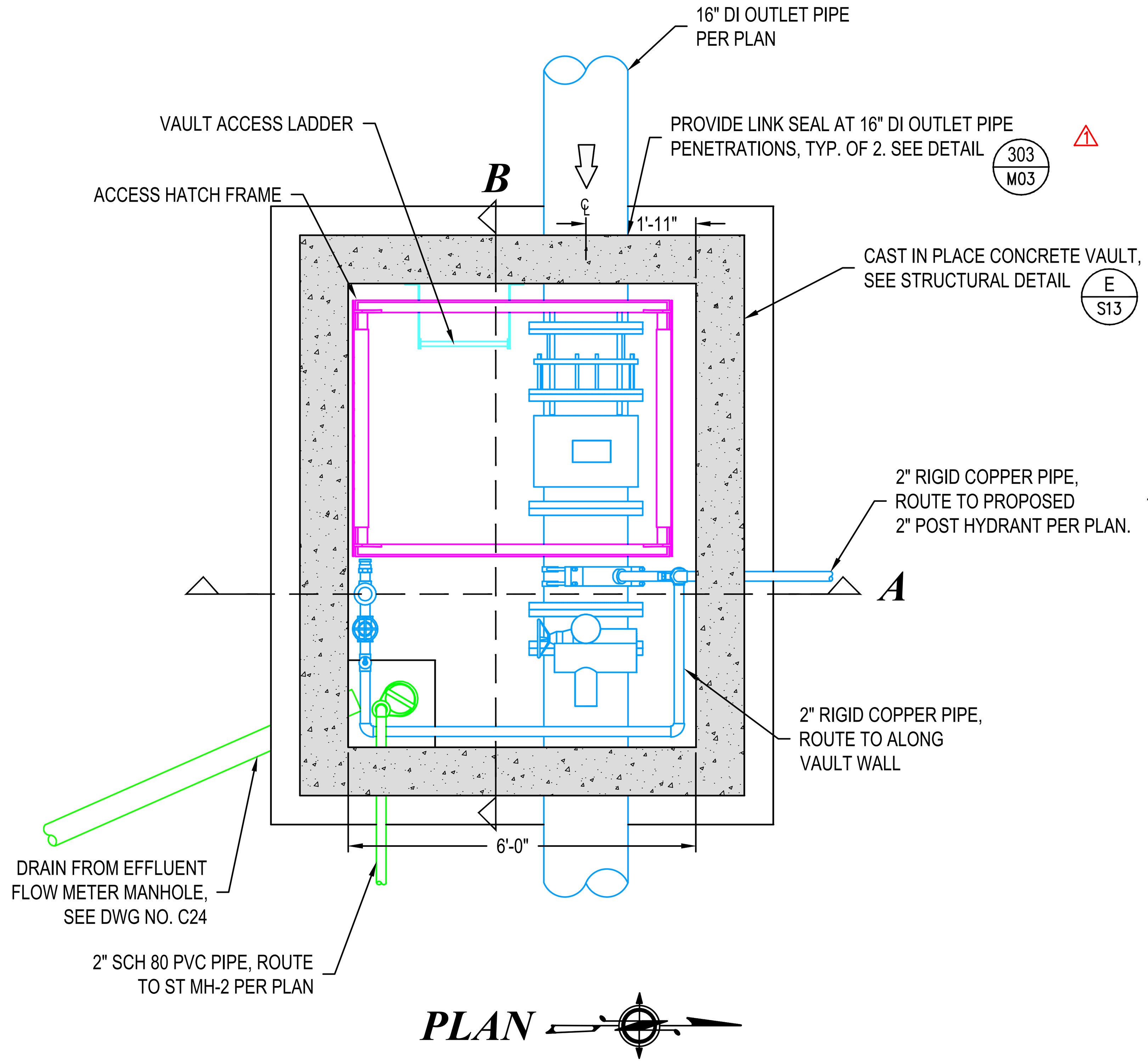
SCALE: SHOWN

0" 1" 2"

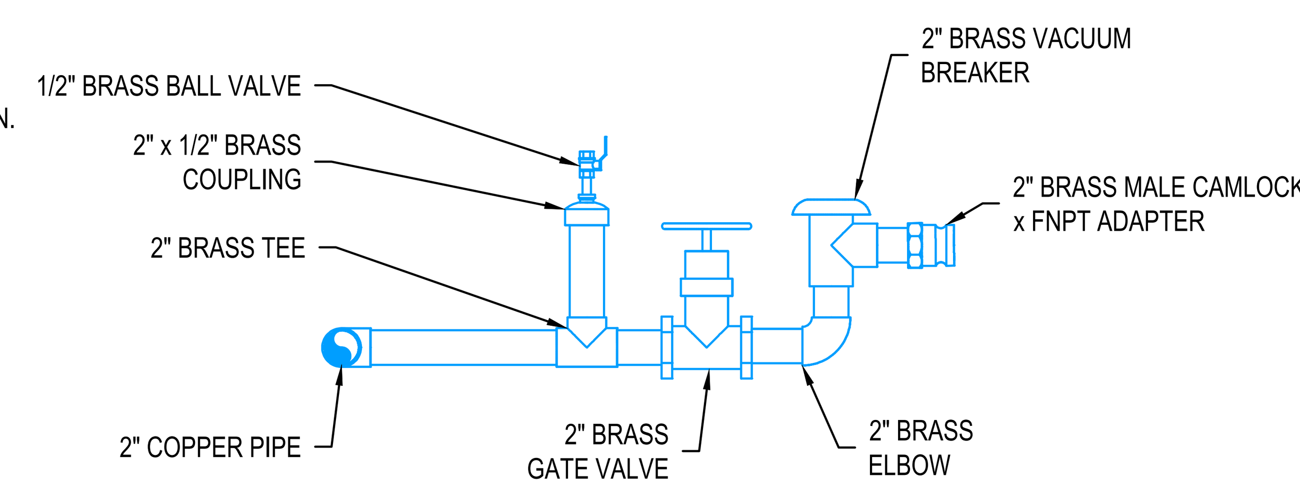
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: M02

SHEET NO.: 52 / 68

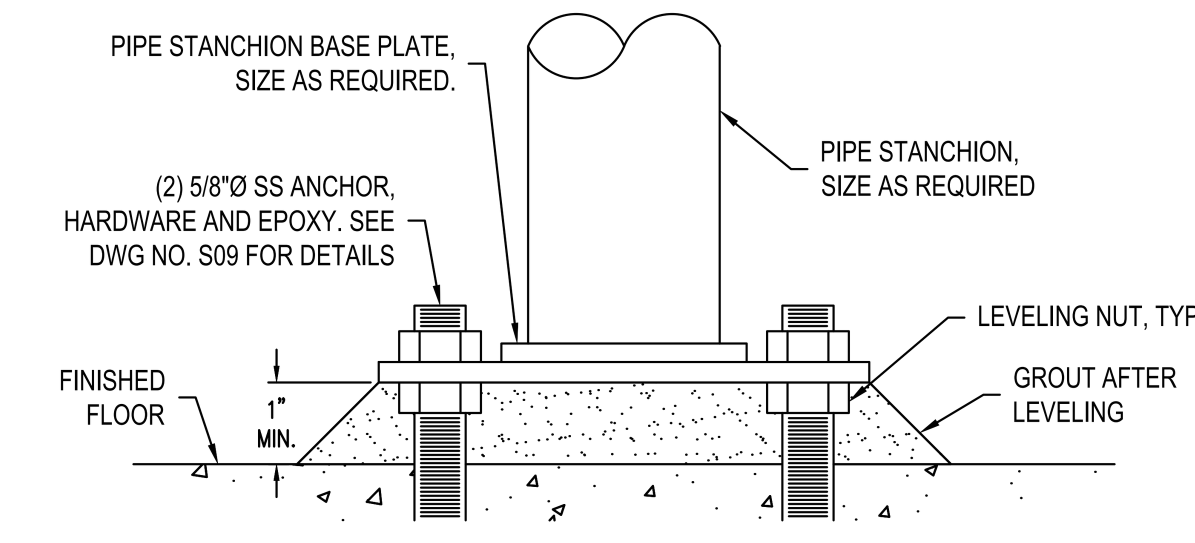


PLAN



VAULT WATER DETAIL

NOT TO SCALE

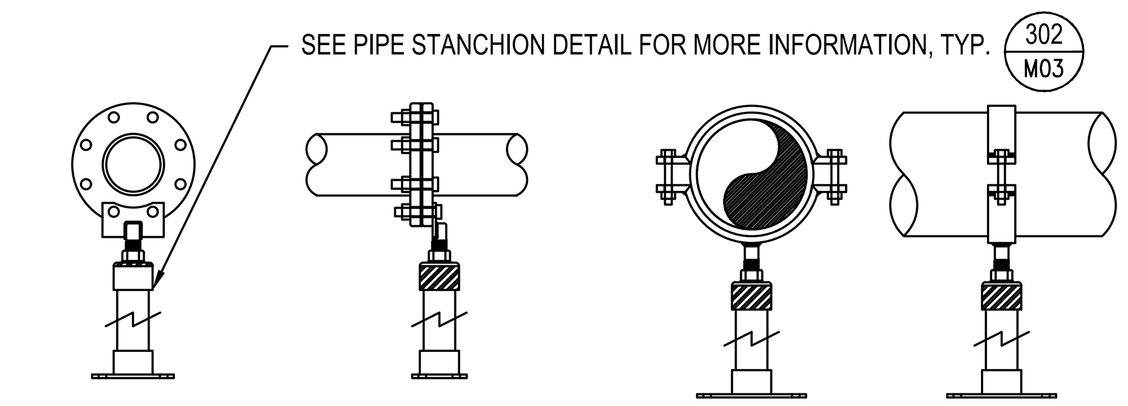


PIPE STANCHION DETAIL 302 TYP.

NOT TO SCALE

NOTE: FLANGE, SADDLE, AND SADDLE CLAMP SUPPORTS SHALL BE "STANDON" BRAND AS MANUFACTURED BY MATERIAL RESOURCES OR EQUAL.

SEE PIPE STANCHION DETAIL FOR MORE INFORMATION, TYP. 302 M03



TYPE A - FLANGE SUPPORT

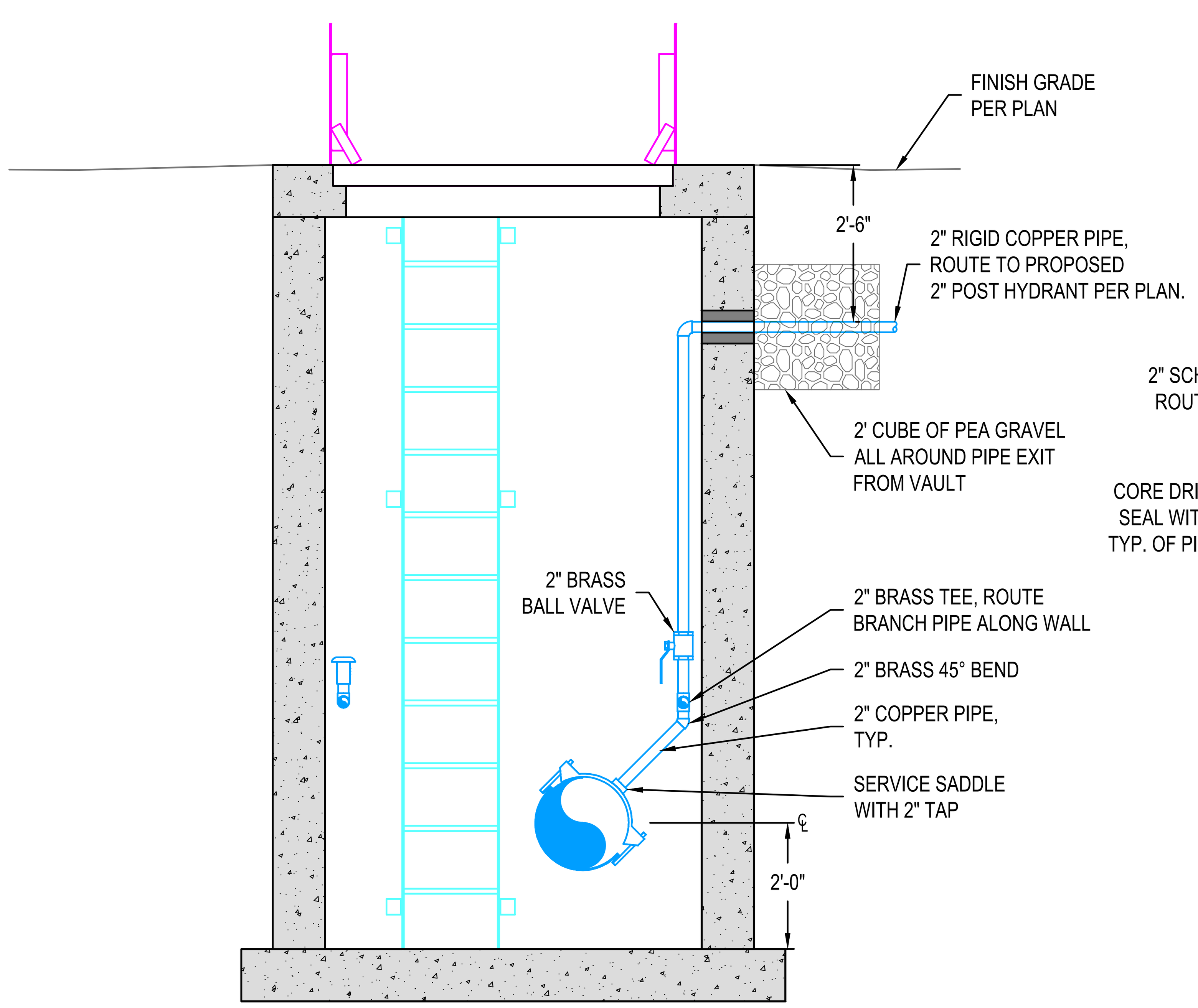
(TYP. AT VALVES, METERS, AND FITTINGS)

TYPE C - SADDLE CLAMP SUPPORT

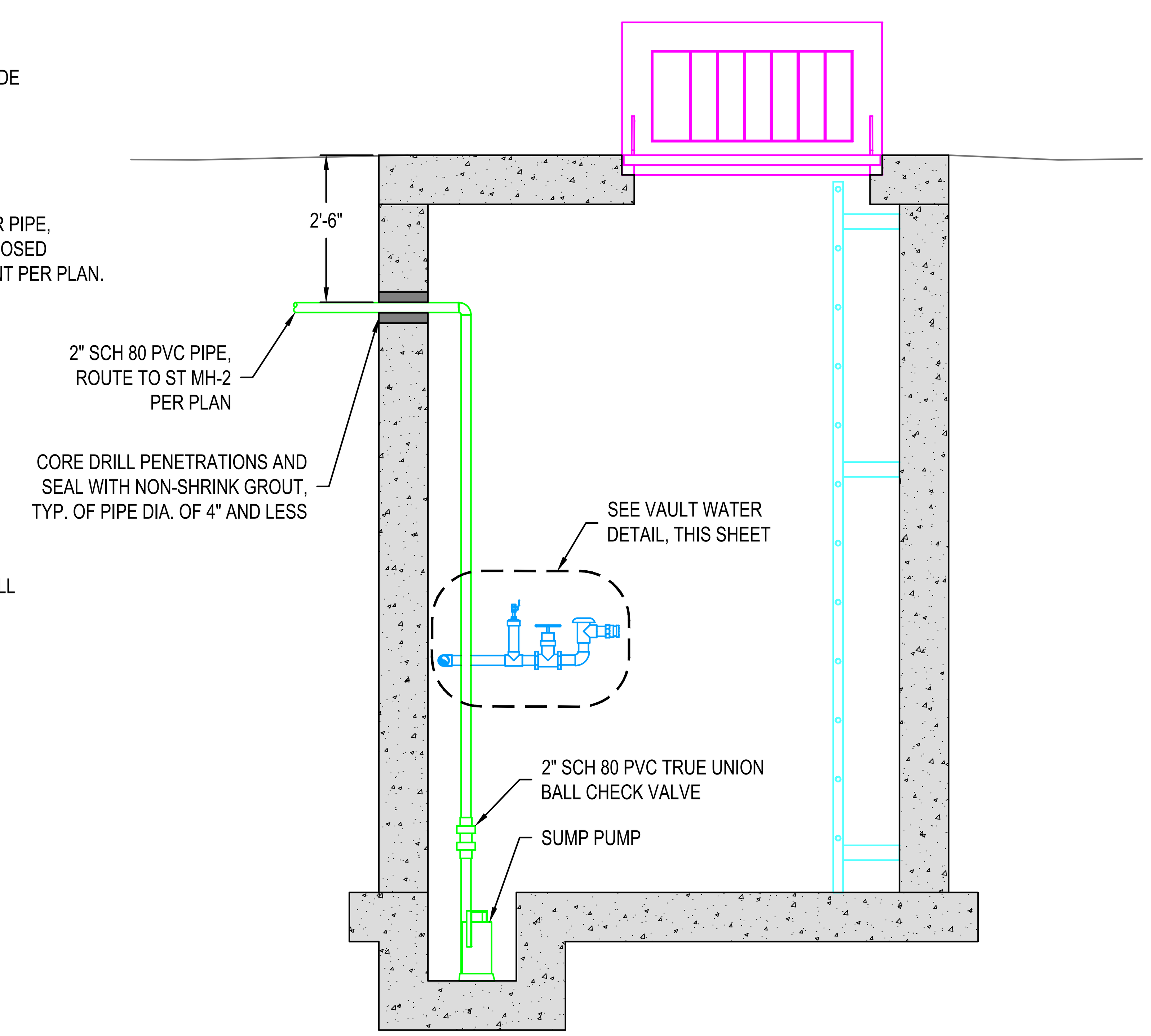
(TYP. AT PIPING)

PIPE SUPPORT 303 TYP.

NOT TO SCALE



SECTION A



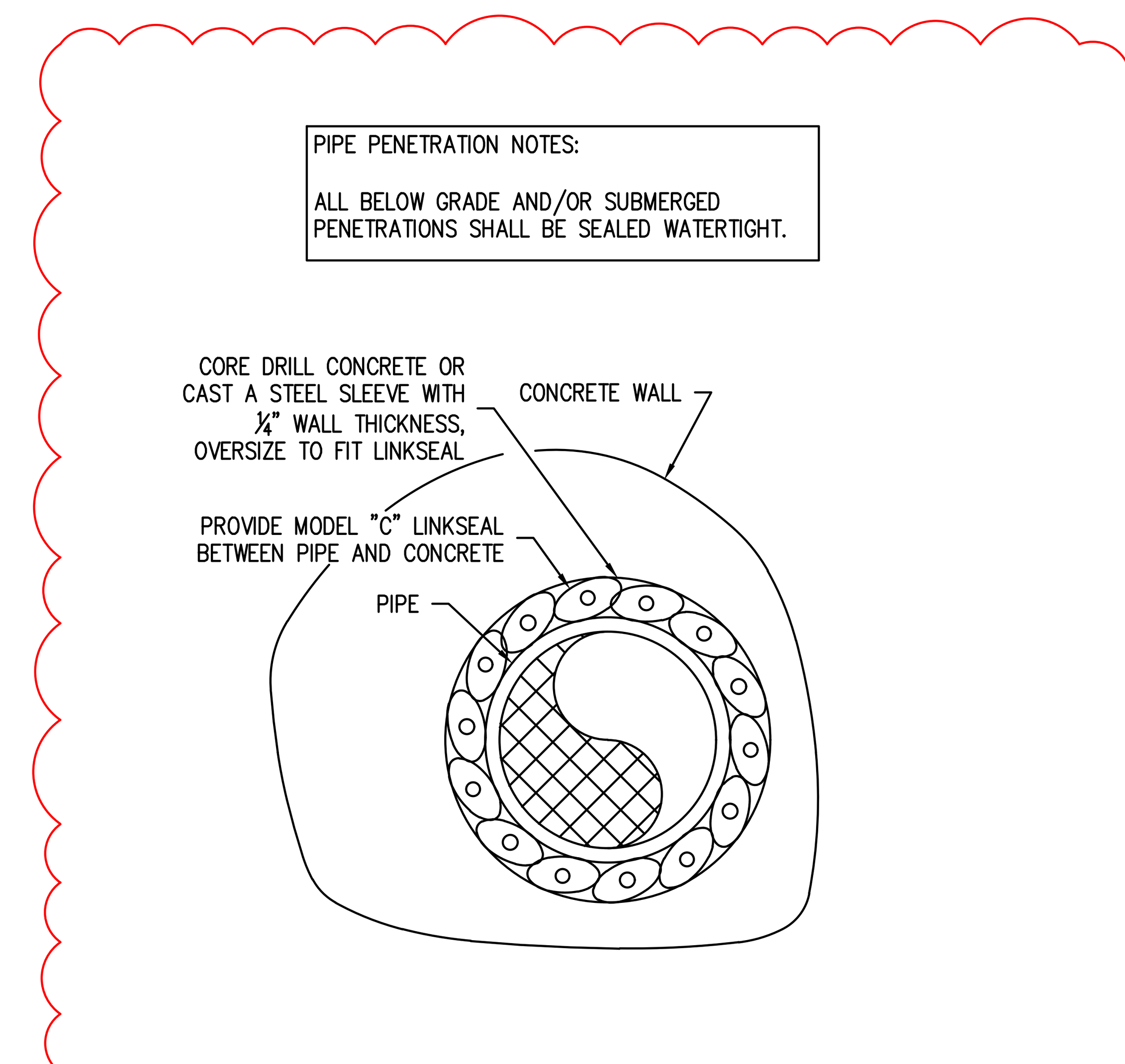
SECTION B

OUTLET VALVE VAULT MECHANICAL DETAIL E M02

½" = 1'-0"

PIPE PENETRATION NOTES:

ALL BELOW GRADE AND/OR SUBMERGED PENETRATIONS SHALL BE SEALED WATERTIGHT.



PIPE PENETRATION 302 M03

NOT TO SCALE

RH2

REGISTERED PROFESSIONAL ENGINEER 94740 OREGON MARCH 12, 2019 JUSTIN R. BARROW

EXPIRES: 12/31/2025

SIGNED: 06/05/2024

CITY OF SCAPPOOSE

KEYS ROAD RESERVOIR

MECHANICAL DETAILS I

ADDENDUM NO. 2, ATTACHMENT 2

ENGINEER: JLC | REVIEWED: JRB

SAVE DATE: Jun 27, 2024 | PLOT DATE: Jun 27, 2024

CLIENT: SCAP | FILENAME: KEYS-P-M01.DWG

JOB NO.: 230-093

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
1	6/27/2024	REVISED PER ADDENDUM NO. 1	JRB	EH

SCALE: SHOWN

0" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: M03

SHEET NO.: 53 / 68