

NORTH KERN WATER STORAGE DISTRICT



Kern County, California

NOTICE TO PLANHOLDERS

ADDENDUM NO. 2

SPECIFICATIONS NO. NK 622-623

2018 AND 2020 RETURN CAPACITY PROJECT



3/1/2024

Sign and return this notice with your Proposal

Firm Name _____

By _____

Title _____

Date _____

By signing the cover sheet, Contractor certifies that it has reviewed the contents of the subject addendum and that its proposal has been prepared taking into consideration the changes made by said addenda.

NORTH KERN WATER STORAGE DISTRICT
ADDENDUM NO. 2
TO THE SPECIFICATIONS NO. NK 622-623
2018 AND 2020 RETURN CAPACITY PROJECT

The Specifications No. NK 622-623 is hereby changed and/or clarified as follows:

1. Specifications

a. E-a Earthwork and Sitework

i. Section E-a-1.1.2. Page E-a-6.

Revise sentence from:

“The Contractor is responsible for coordinating and scheduling all required sampling and testing with the District provided lab.”

to:

“The Contractor is responsible for coordinating and scheduling all required sampling and testing with the Contractor provided lab.”

ii. Section E-a-3 Execution. e.6. Page E-a-19.

Add item m., shown below.

m. Compaction Testing Frequency

Pipe Bedding	1 test every 500 feet
Pipe Spring line	1 test every 500 feet
Top of pipe	1 test every 500 feet
Every 1 foot vertical height	1 test every 500 feet
Final grade of trench	1 test every 500 feet

2. Drawings

a. CB-01

General Notes

Delete General Notes 8 and 9 and replace with “Not Used”.

3. Pre-bid Questions

a. *Question 14:*

It appears that on sheet C-01 there are Farmer Trees located at the start of the 24" at STA 10+02. Will the contractor be required to remove these trees? Or will these be removed by the District or Farmer? If the contractor is to remove them, is there an indication of how many are to be removed? Please clarify.

Answer 14:

The trees required to be removed, for the construction of the well connection, have been removed by the District. The Contractor shall not begin the installation of the well connection, until the well has been constructed and the pump has been installed in the well. The Contractor shall coordinate with the District and/or Well Construction Contractor, for the installation of the well 88-25-005 connection.

b. *Question 15:*

Addendum #1 seems to clarify that the contractor is to perform sampling and testing. Does this mean that the contractor is merely to provide the testing and availability. Or does this mean that the contractor is to pay for the third party testing. Specifically, E-a-6 of the specifications state that testing will be with the District provided lab? Please further clarify if the compactions testing will be paid for and performed by the District.

Answer 15:

The compaction testing will be paid for and performed by the Contractor with a Contractor provided lab.

c. *Question 16:*

It seems that the only Well Connection that has existing District Temporary infrastructure is Well 88-25-013. Bid item A6 is to Salvage and Deliver this to the District Yard. On Drawing C-101 you can see the existing above ground piping, however it runs off the sheet. Can you please provide more information of what is to be removed. Material type, size, and most importantly the total LF of what is to be removed, since it runs off the sheet?

Answer 16:

The existing discharge piping for well 88-25-013 is within the boundary identified on Drawing C-06. The enlarged plan for well 88-25-013 is shown on Detail 3, Drawing C-101. The pipe and temporary road crossing to be salvaged within the Friant Kern Canal boundary is shown on drawing C-201

d. *Question 17:*

Specification J-i-3 part b. is for the "Length of Test Section". It states that the test run shall not exceed 2,500LF. Bid Item A8 is for 2,740LF of 30" C-900. Will there be any leniency on this requirement for pipelines that are very "close" to the maximum length of 2,500LF? For example, will the contractor be held to this strictly, which would require testing the first 2,500LF and then the remaining 240LF in a separate test. Each with their own time and materials required. Such as setup, fill, flush, bulk heads, etc. Please clarify.

Answer 17:

The Contractor may propose to test lengths greater than 2,500 feet.

e. *Question 18:*

Specification J-i-3 part b. is for the "Length of Test Section". It states that the test run shall not exceed 2,500LF. Bid Item B7 is for 2,625LF of 24" C-900. Will there be any leniency on this requirement for pipelines that are very "close" to the maximum length of 2,500LF? For example, will the contractor be held to this strictly, which would require testing the first 2,500LF and then the remaining 125LF in a separate test. Each with their own time and materials required. Such as setup, fill, flush, bulk heads, etc. Please clarify.

Answer 18:

The Contractor may propose to test lengths greater than 2,500 feet.

f. *Question 19:*

In addition to the above questions about test length, there is a statement in the same section that states "If the slope of the pipe is greater than 5% then the pipe shall be tested in sections no greater than 700LF. Does this note apply for the pipeline overall? In this case there are no sections along the overall pipeline that are greater than 5%. (OR) does this apply to the drop down sections where the line is diving down underneath existing crosslines? If this is the case, will the contractor have to test all of these drop down sections separately? We do not believe that this is the intent. For example, bid item B7 has three locations (STA 23+00, 36+00, & 48+00) where there are drop sections. If those locations required separate testing this would require that pipeline to have 4 tests, instead of just one. Please clarify.

Answer 19:

The Contractor may test the drop down sections with the adjoining length of pipe. A separate test of the drop down section is not required unless a test failure is experienced in these section of pipe. The testing of the drop down section separate from the adjoining pipe is at the Contractors option.

g. *Question 20:*

It appears from the jobwalk notes, the Geo Tech provided, and the specifications that the project is 100% native backfill. Specification E-a-7 part a. explains that the Pipe-Bedding Zone shall consist of imported or native soils. It also states that the Geotech report recommends that native soils are "generally" suitable for backfill. Can you please clarify that no sand or other aggregates are needed for this project?

Answer 20:

Native backfill is acceptable for the pipe bedding zone.

h. *Question 21:*

Regarding Bid Item A13 for the 36" Discharge. There is a note to salvage all 12" piping, fittings, valves, and road crossings and return to the districts yard. We cannot tell what the extend of this is. Mostly, how many LF of 12" Pipe there is on site and to what limits to we remove. Can you please clarify with a list of materials to be removed or at a minimum, a LF of pipe?

Answer 21:

The temporary piping, fittings valves, flow meter and items that are installed on the existing pipe from the point of connection to the Friant Kern Canal shall be dismantled and delivered to the District corporate yard. The existing pipe extends from the well at Station 60+68 +/- to 67+34+/- near the Friant Kern Discharge pipe, plus an additional 200 feet on length as indicated on C-201.

i. *Question 22:*

On Sheet CC-01 there are 6EA little Blue and White "U" Symbols. But there is nothing on the pipeline profile indicating anything. What are these symbols for? Please clarify.

Answer 22:

The blue symbols are power poles.

j. *Question 23:*

It appears that on sheet CC-01 there are Farmer Trees located at the Well 88-00-098 Location. Will the contractor be required to remove these trees? Or will these be removed by the District or Farmer? If the contractor is to remove them, is there an indication of how many are to be removed? Please clarify.

Answer 23:

The trees required to be removed, for the construction of the well connection, have been removed by the District. The Contractor shall not begin the installation of the well connection, until the well has been

constructed and the pump has been installed in the well. The Contractor shall coordinate with the District and/or Well Construction Contractor, for the installation of the well 88-00-098 connection.

k. *Question 24:*

It appears that on sheet CB-01 there are Farmer Trees located at the Well 88-29-15 Location. Will the contractor be required to remove these trees? Or will these be removed by the District or Farmer? If the contractor is to remove them, is there an indication of how many are to be removed? Please clarify.

Answer 24:

The trees required to be removed, for the construction of the well connection, have been removed by the District. The Contractor shall not begin the installation of the well connection, until the well has been constructed and the pump has been installed in the well. The Contractor shall coordinate with the District and/or Well Construction Contractor, for the installation of the well 88-29-015 connection

l. *Question 25:*

Drawing CB-01 has a Note 9. It speaks for Demolishing an existing Pump Enclosure and abandoning the existing Well per Kern County Public Health. - It does not appear that there is a bid item for this in Schedule B? Additionally, is there any more information that can be provided about this pump/enclosure? Please clarify?

Answer 25:

Note 9, on DWG No. CB-01, ("Demolish existing pump enclosure and abandon of the existing well per Kern County Public Health. Coordinate with PG&E to disconnect and remove existing overhead electrical service.") will be removed from the drawing. Note 8, on DWG No. CB-01, ("Remove existing pump piping & electrical and deliver to the District's yard. The contractor may re-use the existing discharge pipe for the new pipe to the 88-29") will be removed from the drawing. The scope of work indicated on both these notes will NOT be part of the contract.

m. *Question 26:*

Drawing CB-01 has a Note 9. It speaks for Demolishing an existing Pump Enclosure and abandoning the existing Well per Kern County Public Health. - It does not appear that there is a bid item for this in Schedule B? Additionally, what is the depth of this well? And what are the requirements to abandon it? Please clarify?

Answer 26:

Note 9, on DWG No. CB-01, ("Demolish existing pump enclosure and abandon of the existing well per Kern County Public Health. Coordinate with PG&E to disconnect and remove existing overhead electrical service.") will be removed from the drawing. Note 8, on DWG No. CB-01, ("Remove existing pump piping & electrical and deliver to the District's yard. The contractor may re-use the existing discharge pipe for the new pipe to the 88-29") will be removed from the drawing. The scope of work indicated on both these notes will NOT be part of the contract.

n. *Question 27:*

Drawing CB-01 has a Note 9. It speaks for Demolishing an existing Pump Enclosure and abandoning the existing Well per Kern County Public Health. It also states to coordinate with PG&E to disconnect and remove existing overhead Electrical Service. - It does not appear that there is a bid item for this in Schedule B? Additionally, is the power currently live to the well? If so, who will be shutting off this power in order to disconnect? Please clarify?

Answer 27:

Note 9, on DWG No. CB-01, ("Demolish existing pump enclosure and abandon of the existing well per Kern County Public Health. Coordinate with PG&E to disconnect and remove existing overhead electrical service.") will be removed from the drawing. Note 8, on DWG No. CB-01, ("Remove existing pump piping & electrical and deliver to the District's yard. The contractor may re-use the existing discharge pipe for the new pipe to the 88-29") will be removed from the drawing. The scope of work indicated on both these notes will NOT be part of the contract.

o. *Question 28:*

Drawing CB-01 has a Note 9. It speaks for Demolishing an existing Pump Enclosure and abandoning the existing Well per Kern County Public Health. It also states to coordinate with PG&E to disconnect and remove existing overhead Electrical Service. - It does not appear that there is a bid item for this in Schedule B? Additionally, where is the existing overhead power? How long of a stretch is the run of overhead power that will be removed? Please provide more information.

Answer 28:

Note 9, on DWG No. CB-01, ("Demolish existing pump enclosure and abandon of the existing well per Kern County Public Health. Coordinate with PG&E to disconnect and remove existing overhead electrical service.") will be removed from the drawing. Note 8, on DWG No. CB-01, ("Remove existing pump piping & electrical and deliver to the District's yard. The contractor may re-use the existing discharge pipe for the new pipe to the 88-

29")will be removed from the drawing. The scope of work indicated on both these notes will NOT be part of the contract.

p. *Question 29:*

There are few line items that aren't listed on the bid form provided by NKWSD and want to know if NKWSD will be providing these or we as the Contractor have to include them in our bid. Is the Compaction testing lab and Surveying provided by NKWSD. Please Advise.

Answer 29:

The Contractor shall be responsible for all surveys necessary to complete the work. The compaction testing will be paid for and performed by the Contractor with a Contractor provided lab. See Addendum 1 and answers above.

q. *Question 30:*

RFI Questions # 6 per Addendum 1 regarding if Materials need to be "Buy America". Question is answered unclear. It states we do not necessarily need to procure Buy America Materials but to Refer to Special conditions Item D-3 (k). and on this section, it basically states that if materials are available "Buy America" to procure these materials instead of. Can you specify if we need to provide "Buy America" Materials or if we can go the standard imported materials. (Imported Materials more likely shorter lead times). We just don't want to make our own decision on these materials because there is quite a difference on price and lead times.

Answer 30:

Section D-3 and the response in Addendum 1 speak for themselves.

r. *Question 31:*

On sheet 15 of 27 of Schedule B Tie in Locations 88-05-03 it does not call out if the 12" pipe to be PVC or Steel. Same for 12" Discharge pipe in 88-29-15 Well Connection Detail. Please Advise.

Answer 31:

The pipe shall be welded steel pipe.

s. *Question 32:*

Would the owner and engineer entertain providing the third party compaction testing for this project? It is a common practice that saves costs overall. Rather than having the contractor assume the costs in the estimate? Please advise.

Answer 32:

The contractor shall provide the compaction testing

t. *Question 33:*

Would the owner and engineer entertain providing the third party survey for this project? It is a common practice that saves costs overall. Rather than having the contractor assume the costs in the estimate? Please advise.

Answer 33:

The Contractor shall provide the survey

u. *Question 34:*

The specification section regarding Compaction Testing (E-a) under "Testing Intervals" it states in part 2) "These tests shall also be performed for ever 500 cubic lineal feet of trench material placed". What does this mean? Should this note say for every 500 lineal feet? This seems to make more since. Please make clear how often and when compaction will be taken?

Answer 34:

The contractor shall test the pipe bedding, pipe zone at 500 foot intervals, top of pipe at 500 ft intervals and 1 foot vertical height of backfill at 500 foot intervals to finish grade. The station of each test shall be staggered.

v. *Question 35:*

After our site visit, the ponds along the 8-05 pipeline where we will be placing the new pipeline are full of water from the canal. There is green vegetation, wet land, and ponding water in the alignment. Will the ponds be drained prior to construction later this year? Will the district cover the costs of drying these areas? Will water mitigation point wells be required for this work?

Answer 35:

The ponds will be drained by the District. Contractor shall notify the District, at least 14 calendar days prior to the when installation of the pipe is scheduled.

w. *Question 36:*

After our site visit, the canal that runs parallel to the 8-05 pipeline is full and flowing. Will this canal be operational during construction? The Pipeline is very close to the canal in these areas. Please advise.

Answer 36:

The canal delivers water to serve land owners. The canal cannot be drained. The canal banks are compacted, however the Contractor shall be prepared to control any water within the trench excavation.

x. *Question 37:*

If the answer to the above questions is no, Will water mitigation point wells be required for this work?

Answer 37:

The canal delivers water to serve land owners. The canal cannot be drained. The canal banks are compacted, however the Contractor shall be prepared to control any water within the trench excavation.

y. *Question 38:*

The inlet structures that feed the ponds from the canal are currently plugged using stop logs. But they are not fully closed/shut. The water line is higher on all of them allowing water to flow into the ponds. Can the contractors plug these inlets? Please advise.

Answer 38:

The contractor can plug the inlet into the pond, not the turnout in the canal. They can build a dirt dam on the pond side around the pipeline feeding the pond.

z. *Question 39:*

If the contractor chooses to use Pea Gravel Import for the Pipe Bedding Zone, can spoils be lost on site or must they be hauled off? Please clarify?

Answer 39:

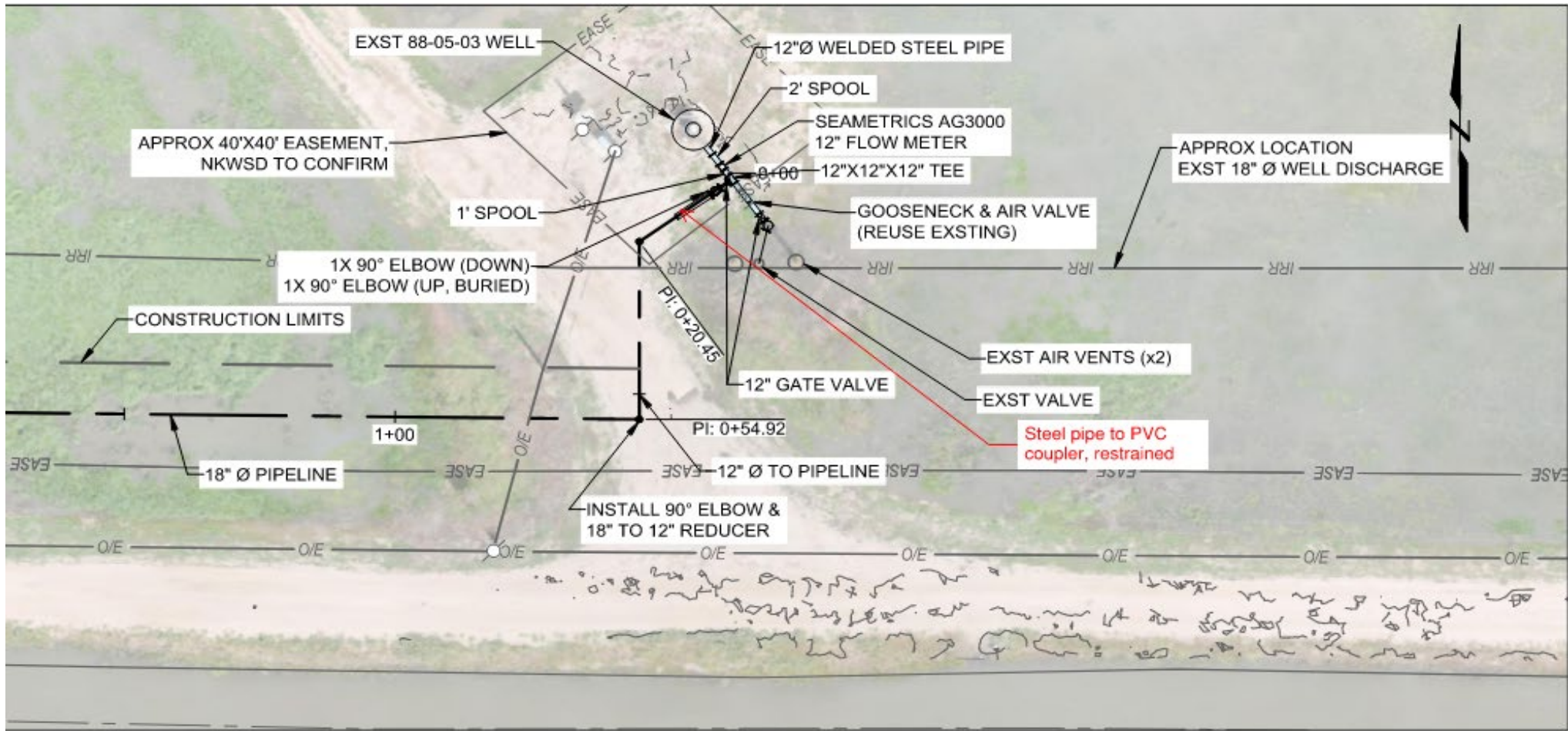
Section E-a.2.4 states: 4. Imported Materials – Pipe-Bedding Zone
1. Imported bedding material shall be Class II materials per ASTM D 2321, i.e., meeting the Unified Soils Classification System (USCS) criteria for GW, GP, SW, SP, GW-GC or SP-SM gravels and sands. Excess trench materials can be uniformly distributed over the top of the trench.

aa. *Question 40:*

Are the Steel Lines at the new Well Connection Locations to be FBE L&C as the drawings state? Please clarify?

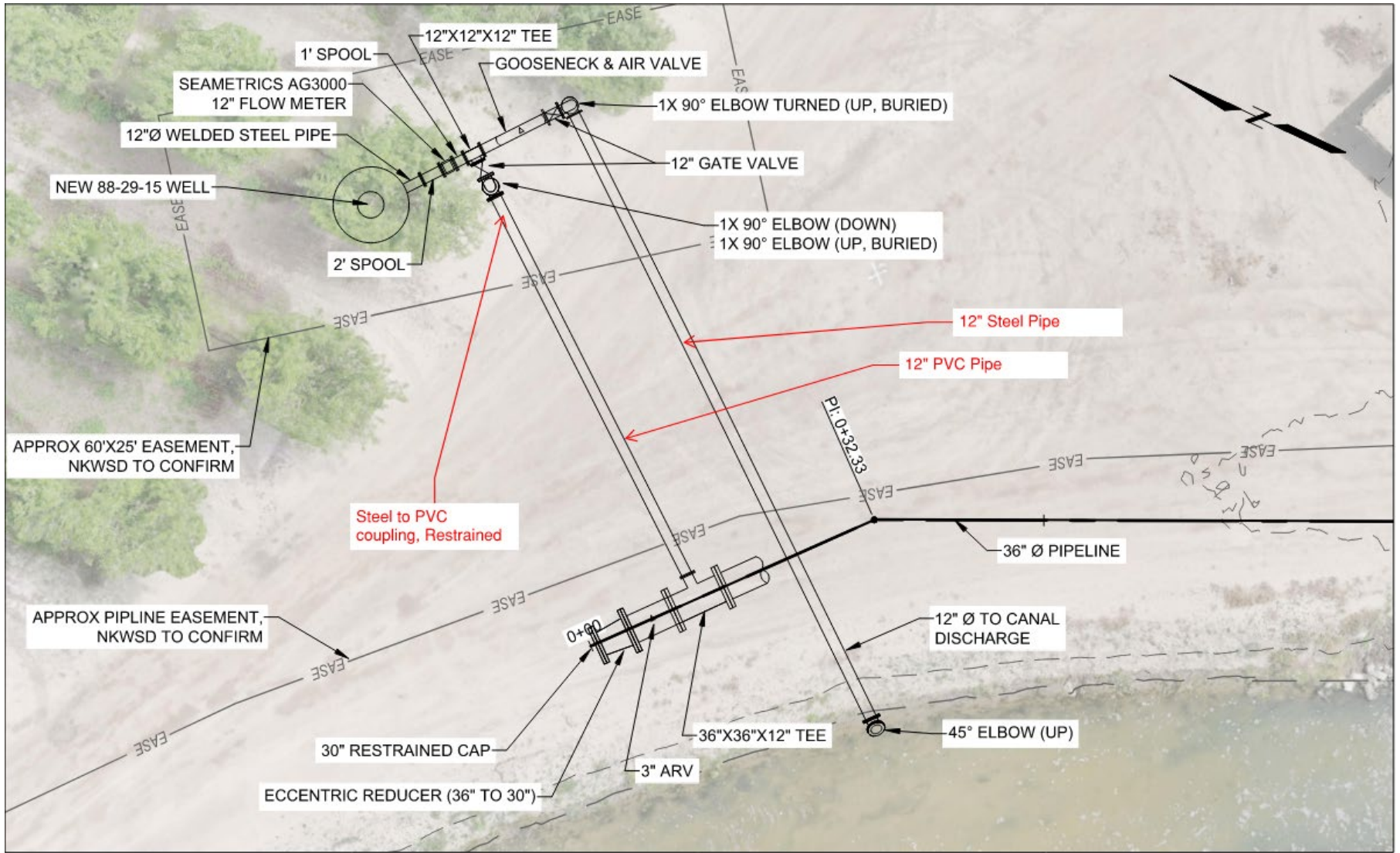
Answer 40:

The above grade pipelines shall be steel, lined and coated. The below grade pipelines shall be C900 PVC, unless otherwise noted. Well connection 88-29-15 and 88-05-03 below grade pipes connected to the PVC main line shall be C900 PVC. A steel to PVC connector, restrained, shall be installed downstream of the buried steel elbow at both connections. Well connection 88-29-015 below grade pipe that discharges to the canal shall be steel. The drawing will not be re-issued with Addendum no. 2



88-05-03 WELL CONNECTION

SCALE: 1"=20'



88-29-15 WELL CONNECTION

SCALE: 1"=10'

bb. *Question 41:*

Will the District/Engineer allow DI pipe and fittings at the Well Connections and Modification sites in lieu of the listed steel pipe? We propose DI below ground be CM lined and Asphalt coated with 8Mil poly bagging. We propose the above ground DI be CM lined and primer coated. The final coating of the above ground DI pipe would be per the Section H. Similar to the above ground steel pipe, which would be a two part primer and polyurethane in the field coating.

Answer 41:

The above grade pipelines shall be steel, lined and coated. The below grade pipelines shall be C900 PVC, unless otherwise noted.

cc. *Question 42:*

Is import Pea Gravel suitable for the full Pipe-Bedding zone. We would like to utilize pea gravel for both the Pipe Zone and Bedding Zone.

Answer 42:

Section E-a.2.4 states: 4. Imported Materials – Pipe-Bedding Zone
1. Imported bedding material shall be Class II materials per ASTM D 2321, i.e., meeting the Unified Soils Classification System (USCS) criteria for GW, GP, SW, SP, GW-GC or SP-SM gravels and sands.

dd. *Question 43:*

The specs call the pipe to be SCH. 40 A106 SEAMLESS FOR 24" AND SMALLER or as shown on drawings. The drawings show 12" as 1/4" wall only on a couple of drawings. The fittings must be ASTM A234 weld fittings and specs say they have to match the pipe thickness. So, it's up to you if you want to go for SCH. 40 or STD. WT. for the 12" The 24" and 36" piping on drawings specifically calls out 3/8" wall.

Then the linings and coatings issue. The specs call out high build epoxy lining/ prime coating for exposed and tape wrap 50 mils for buried. The drawings call out fusion epoxy lining and coating for the exposed. There's quite a price difference between high build and fusion. If we can't get it clarified before the bid we will have to go with fusion to cover ourselves.

Answer 43:

ASTM A53 pipe, Standard weight (t=3/8") is acceptable. Pipe coating and lining shall conform to J-1-3c Coatings, epoxy lining of interior surfaces and coating exterior surface is acceptable for exposed pipe and epoxy lining of buried pipe. 50 Mil Tape wrap of buried pipe.

ee. *Question 44:*

After review the plans and specifications, we need clarification on the following:

- The specs call the pipe to be SCH. 40 A106 SEAMLESS FOR 24" AND SMALLER or as shown on drawings.
 - The drawings show 12" as 1/4" wall but only on a couple of drawings.
- The fittings must be ASTM A234 weld fittings and specs say they have to match the pipe thickness.
 - In line with the above
- The 24" and 36" piping on the specification reference A134, would a higher grade of A53GRDB/API5L be acceptable?

Answer 44:

ASTM A53 pipe, Standard weight (t=3/8") is acceptable. Pipe coating and lining shall conform to J-1-3c Coatings, epoxy lining of interior surfaces and coating exterior surface is acceptable for exposed pipe and epoxy lining of buried pipe. 50 Mil Tape wrap of buried pipe. ASTM A53 -22 covers pipe sizes up to 26" NPS. For pipe larger than 26", A134 pipe, t=3/8" is acceptable.

4. Attachments

- a. Planholders List
- b. Specifications
 - i. E-a Earthwork and Sitework
- c. Drawings
 - i. CB-01: 88-29 WELLS PLAN AND PROFILE STA 0+00 TO 2+04

North Kern Water Storage District
 2018 and 2020 Return Capacity Project
 Planholders List

COUNT	ISSUED TO	CONTACT
-	Kern County Builders Exchange Samantha Geissel	sgeissel@kcbex.com admin@kcbex.com
-	Dodge Data and Analytics	dodge.bidding@construction.com support@construction.com projectdata@construction.com kshigematsu@wmlylesco.com
1	W.M. Lyles Kevin Shigematsu	kshigematsu@wmlylesco.com
2	Nicholas Construction, Inc. Alexander Silicz	alex@nicholasconstructioninc.com
3	Specialty Construction, Inc. Rhona Haworth	bids@specialtyconstruction.com rhaworth@specialtyconstruction.com
4	Gar Bennett Kyle Leland	kleland@garbennett.com
5	Laurel Agg & Water Curtis Lutje	clutje@laurel-ag.com
6	Kern Pacific Taylor Landcaster	taylor@kernpacific.com
7	Rubens Pipeline Andres, Ruben	andres@rubenspipeline.com ruben@rubenspipeline.com
8	Water Associates Chuy Cuevas	chuy@waterassociates.com
9	SA Camp Don Pederson	donp@sacamp.net
10	DC Inspections, Inc Shannon Bennett	sbennett@dcinspections.com
11	Prime Supply 1	contact@primesupply1.com
12	Techno Coatings Nick Cichirillo	nick@technocoatings.com

SECTION E-a**EARTHWORK AND SITE WORK****E-a-1 GENERAL****a. Description**

1. This section describes the requirements for the following:
 - a. Exploratory excavations (potholing) to determine the locations and depths of existing utilities; site work including clearing and grubbing; earthwork; excavation, backfill, materials, testing, shoring for structures and pipelines.
2. The requirements include excavating, backfilling, and compacting for the following:
 - a. Water Pipelines;
 - b. Meter Vaults
 - c. Anchor Blocks; and
 - d. Other items, as shown.
3. Provide materials, equipment and labor required to execute this work as indicated on the Drawings, specified herein, and necessary to complete the work of this section.

b. Related Sections

1. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:
 - a. Section E-b Pavement Removal and Replacement
 - b. Section E-c Demolition
 - c. Section F-a – Cast In Place Concrete
 - d. Section F-c – Precast Concrete Vaults
 - e. Section J-b – Installation of Pressure Pipelines

c. References

1. The following publications form a part of this specification to the extent referenced.

- a. American Society for Testing and Materials (ASTM):
 - 1) ASTM D 2321 – Underground Installation of Thermoplastic and Sewers Other Gravity-Flow Applications.
 - 2) ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,40 ft-lbf/ft³ (600 kN-m/m³))
 - 3) ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2700 kN-m/m³))
 - 4) ASTM D 4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
 - 5) ASTM D 5971 – Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material.
 - 6) ASTM D 6024 – Standard Test Method for Ball Drop on Controlled Low Strength Material (CLSM) to Determine Suitability for Load Application.
2. Cal/OSHA (California Title 8, Division 1, Chapter 4).
3. California Department of Industrial Safety.
4. Standard Specifications, State of California Department of Transportation (Caltrans), 2018.
5. California Labor Code – Section 6705.
6. Construction Safety Orders of the California Division of Industrial Safety.
7. Kern County Encroachment Permit.
8. Geotechnical Engineering Investigation Proposed NKWSD TCP Mitigation Project, Krazan and Associates, August 5, 2021.
9. Standard Specifications for Public Works Construction (SSPWC):
 - a. Standard Specifications for Public Works Construction
 - b. Standard Plans for Public Works Construction

d. Submittals

1. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.
2. Submit the following:
 - a. Exploratory Excavation (Potholing) Results
 - b. Clear and Grub Plan
 - c. Excavation Plan
 - 1) Copy of the excavation permit issued by the California Department of Industrial Safety.
 - 2) Shop drawings shall be submitted showing excavation and shoring, bracing, or sloping for worker protection in accordance with the General Conditions. The Contractor shall comply with the provisions for “Shoring and Bracing Drawings” in Section 6705 of the California Labor Code. The Contractor, prior to beginning any trench or structure excavation five feet deep or over shall submit to the Engineer and shall be in possession of the Engineer’s written acceptance of the Contractor’s detailed plan showing design of all shoring, bracing, sloping of the sides of excavation, or other provisions for worker protection against the hazard of caving ground during the excavation of such trenches or structure excavation. If such plan varies from the shoring system established in the Construction Safety Orders of the State of California, such alternative system plans shall be prepared by a civil or structural engineer licensed in the State of California.
 - d. Placement Plan
 - 1) Compaction methods and equipment specifications
 - 2) Six copies of a report from a testing laboratory shall be submitted verifying that backfill material conforms to the specified gradations or characteristics.
 - 3) Material samples and grain size analysis shall be submitted for any imported fill and/or engineered fill material used.

- e. Geotextile Fabric (Structure Earthwork)
- f. The slurry and CLSM mix designs, prepared by the manufacturer, showing compliance with the specified properties.
- g. Submit inspection requests prior to the following a minimum of forty-eight (48) hours in advance:
 - 1) Structure foundation
 - 2) Placing geotextile fabric
 - 3) Placing crushed rock over geotextile fabric; and
 - 4) Placing precast structures on approved base or subgrade
- h. Such other samples of materials as the Engineer may require.

e. Quality Assurance

1. All materials, equipment, and installation methods shall be in accordance with the Project Geotechnical Investigation Report.
2. Use workers who are thoroughly trained and experienced in the work, who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.
3. Place and maintain barricades and safety signs as needed for safety.
4. Comply with the Kern County Encroachment Permit and Cal/OSHA codes and regulations.
5. Rework work not meeting the specified requirements, as determined by the Engineer, at no additional cost to the District.
6. Provide the necessary field survey to assure compliance with the lines and grades as shown on the drawings. If control stakes are destroyed or removed, restaking will be the sole responsibility of the Contractor at no additional expense to the Department.
7. Completed subgrade elevations shall be within 0.05 foot of design subgrade.

f. Site Inspection

1. Prior to moving onto the project site, the Contractor shall visit and inspect the Site Conditions and review maps of the site, pipeline routes, and facilities delineating the District's property and limits of work area lines.

g. Field Control

1. Barricades, cones, safety signs, etc. shall be placed and maintained as required by pertinent safety regulations.
2. Promptly clean up loose excavation dirt and sweep clean all usable portions of roadway as the work progresses to prevent dirt being scattered. Promptly and regularly apply water or dust palliative to all dust and dirt areas, including stockpiles, to prevent dust from being a nuisance.

h. Protection and Location of Existing Utilities and Facilities

1. The location and existence of substructures were determined from a search of records maintained by their owners and exploratory excavations performed during the design phase. The location of utilities as shown on the Drawings are considered to be approximate. No guarantee is made or implied that the information is complete or accurate. It shall be the Contractor's responsibility alone to determine the exact location of substructures of every nature and to protect them from damage.
2. All facilities shown specifically on the Drawings, or which have been marked by their respective owners shall be potholed.
3. Irrigation Water service lines and locations, where shown, are based on approximate locations of farm turnouts, existing valve boxes, and records obtained from the Owner.
4. Overhead facilities, including, but not limited to, electrical facilities, and telephone facilities are not shown on the pipeline profiles.

i. Protection of Landowner Facilities

1. The Contractor shall be responsible for the protection of all orchards, trees, shrubs, fences, and other agricultural or landscape items adjacent to or within the work area, unless otherwise directed by the Engineer. In the event of damage to agricultural, landscape, or landowner items, the Contractor shall replace the damaged items in a manner satisfactory to the Engineer.

j. Definition of Pipe Zones

1. Trench Zone
 - a. The Trench Zone shall include the portion of the trench from the top of the pipe zone to the existing surface.
2. Pipe Zone
 - a. The Pipe Zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 12-inches above the top of the pipe. This

zone is also part of the “pipe-bedding zone” and as such it shall be filled with bedding material identical to that which is placed in the bedding zone.

3. Bedding Zone

- a. The Bedding Zone shall be defined as a layer of material immediately below the pipe zone extending over the full trench width. This is also part of the “pipe-bedding zone”

4. Pipe-Bedding Zone

- a. The pipe-bedding zone shall include the zones defined as the “pipe zone” and the “bedding zone”. It shall include the full width of the trench from the bottom of the trench to a point 12-inches above the top of the pipe. Unless otherwise shown or specified, the pipe-bedding zone shall be from 6-inches under the pipe to 12-inches over it.

k. Definition of Structural Zones

1. Upper Backfill Zone

- a. The upper backfill zone is defined as the backfill to the full width of the excavation from the top of the structure to the finished.

2. Structural Backfill Zone

- a. The structural backfill zone is defined as backfill from the top of the structure to the bottom of the excavation, extending the full width of the excavation.

l. Testing for Compaction

1. The Contractor shall take samples during placement of materials and test for moisture content, density, compaction, gradation, and classification to ensure conformance with these specifications.

2. The Contractor is responsible for coordinating and scheduling all required sampling and testing with the Contractor provided lab.

3. Relative Compaction

- a. “Relative Compaction” shall be expressed as the ratio, expressed as a percentage of the in place dry density to the laboratory maximum dry density.

4. Compaction Compliance

- a. Compaction shall be deemed to comply with the specifications when none of the tests fall below the specified relative compaction. The Contractor shall provide a written report of testing compliance prior to placement of additional fill or backfill.

5. Testing Intervals
 - a. Testing of Pipelines shall be completed at the following intervals:
 - 1) A minimum of one soil classification and one moisture-density relation test shall be performed for each different type of soil material used for pipe-bedding and trench backfill.
 - 2) These tests shall also be performed for every 500 cubic lineal feet of trench material placed.
 - 3) A minimum of one field density test shall be performed for each soil type, at the pipe bedding prior to pipeline installation, at pipe springline, 6-inches above the top of pipe, and at least one test for each 24 inches compacted thickness above the pipe zone.
 - b. Testing of Structural Backfills shall be complete at the following intervals:
 - 1) One (1) per lift of fill or for every 500 cubic yards of completed fill, whichever is more frequent.
6. The presence of marginal materials, poor soil conditions or a prevalence of failed test results will be cause for substantially increasing the frequency and intervals of required testing. Alternatively, with approval of the Engineer and the District, the trench zone may be backfilled with a two-sack sand-cement slurry at no additional cost to the District.
7. Material placed between successful test and failed test shall be tested at one-fifth (1/5) the distance intervals until a passing test is achieved. All material from failed test to successful test shall be removed, recompacted and retested.

E-a-2 Products

a. Pipe Backfill

1. Native Backfill– Trench Zone
 - a. Based on the recommendations provided in the Project Geotechnical Investigation Report, the native material encountered at the site is generally suitable for use as Class II, III or IV trench backfill.
 - b. Trench backfill material placed above the pipe-bedding zone materials shall be free from roots, debris, and organic matter. The backfill shall generally consist of non-expansive material that is not excessively wet and shall be free of cobbles or hard lumps of material larger than 3 inches in maximum dimension. Cobbles larger than three inches in size shall be broken into smaller pieces and removed from the site. Clay lumps shall be properly

processed, and moisture conditioned to break up the lumps and uniformly mix into the trench backfill material.

2. Backfill Material – Pipe-Bedding Zone

- a. The pipe-bedding zone is defined above in Part i paragraph entitled “Definition of Zones.” Pipe-bedding material shall consist of imported or suitable native material as described in this section.
- b. Unless otherwise shown or specified, pipelines shall be supported on a minimum 6-inch-thick bedding layer below the pipe. Bedding layer material shall consist of suitable on-site materials from the trench excavations or imported materials specified herein.

3. Native Materials – Pipe-Bedding Zone

- a. Based on the recommendations provided in the Project Geotechnical Investigation Report, the native material encountered at the site is generally suitable for use as Class II, III or IV pipe-bedding zone backfill.
- b. Pipe-bedding backfill material shall be free from roots, debris, and organic matter. The backfill shall generally consist of non-expansive material that is not excessively wet and shall be free of cobbles or hard lumps of material larger than 1.5 inches in maximum dimension. Clay lumps and cobbles larger than 1.5 inches in size shall be removed from the site.

4. Imported Materials – Pipe-Bedding Zone

- a. Imported bedding material shall be Class II materials per ASTM D 2321, i.e., meeting the Unified Soils Classification System (USCS) criteria for GW, GP, SW, SP, GW-GC or SP-SM gravels and sands.

b. Structural Backfill

1. Native Earth Backfill – Upper Backfill Zone

- a. Native earth backfill shall be excavated fine-grained non-organic materials free from peat, roots, debris, and rocks larger than 3 inches, and which can be compacted to the specified relative compaction.

2. Structural Backfill – Structural Backfill Zone

- a. Structural backfill materials shall consist of hard, durable, and clean sand, gravel, or crushed stone which is free of organic material, clay balls, and other deleterious substances. Gradation shall be per SSPWC 217-3.

3. Crushed Rock Base
 - a. Crushed or natural rock shall be provided as base under the structure per SSPWC 200-1.2. Unless otherwise shown or specified crushed rock shall be 3/4-inch maximum size.
 - b. Unless otherwise shown or specified, the compacted crushed rock base for structures shall be a minimum of 6 inches thick and extend 1 foot from the structure in all directions.
4. Geotextile
 - a. Geotextile fabric shall be non-woven Mirafi 140NL, or equivalent.
 - b. Geotextile shall be placed between the crushed rock and surrounding natural soil and backfill materials to prevent migration of fines into the crushed rock.
 - c. The geotextile shall be overlapped at the top by a minimum of one foot.

c. Water For Compaction

1. Water used to assist in compaction shall be potable water unless otherwise approved by the Engineer.
2. Refer to Section D-8 for additional information regarding availability and use of District water.

d. Controlled Low Strength Material (CLSM)

1. CLSM shall consist of free-flowing and self-compacting material that consists of cement, pozzolan fly ash, fine and coarse aggregates, and water in accordance with SSPWC 201-6. The fines content in the CLSM mix (percent material passing the No. 200 sieve including fly ash additives), shall be limited to 20 percent, by weight, per cubic yard.
2. CLSM shall have a minimum 28-day compressive strength of not less than 300 psi.

E-a-3 EXECUTION

a. Protection and Location of Existing Utilities and Facilities

1. Notification:
 - a. The Contractor is responsible for calling Underground Service Alert at 811. This notification shall be done 48 hours prior to before any excavating, including potholing, and trenching work. The Contractor is responsible for marking on the ground the location of the excavated area. In addition, the

Contractor shall request that the owner's representatives be on site during potholing of all non-District owned underground facilities. Representatives of some and/or all affected utilities may be present at the preconstruction meeting; however, their presence at the preconstruction meeting shall not relieve the Contractor of the responsibility of notifying each utility prior to beginning any work.

- b. Any list of names and telephone numbers for utility or substructure owners shown on the Drawings or in any other contract document is intended for the convenience of the Contractor and is not guaranteed to be complete or correct.

2. Potholing:

- a. At least thirty (30) business days prior to any construction, including sawcutting or grading pavement, the Contractor shall excavate, expose, and determine ("pothole") the exact location (horizontal and vertical alignment), materials of construction, and depth of each and every utility crossing the proposed pipelines as well as the connection locations to the existing facilities at least 1,500 feet ahead of a pipe trench heading to provide sufficient lead-time to resolve utility conflicts. The Contractor shall also pothole at 200-foot intervals all facilities that are parallel with, and within twenty (20) feet, of the proposed pipelines, as marked in the field by their respective owners to determine exact location of said facilities.
- b. At all locations where the Contractor is required to tie-into existing District owned pipelines, the Contractor shall pothole the exact location (horizontal and vertical alignment), pipe materials, and pipe dimensions prior to procuring any materials. Contractor shall be responsible for determining if connections can be completed as shown on the plans or if design modifications need to be considered by the Engineer. If discrepancies are found, the Contractor shall immediately notify the Engineer so the appropriate changes can be made.
- c. It shall be the Contractor's responsibility to make exploratory excavations (by "hand" where prudent) to determine the true location and depth of all utilities shown on the plans.
- d. Contractor shall protect all utilities crossing and parallel to the proposed pipelines in place, all based on Contractor's field measurements and at no additional cost to the District.
- e. All potholing shall be completed, and the results furnished to the District at least twenty (20) business days prior to any construction, including sawcutting or grinding pavement.

- f. If utility locations or tie-ins to District facilities vary from those shown on the Drawings, the Engineer may redesign alignment of pipelines. The Contractor shall construct the pipelines in accordance with the redesigned alignment at no additional cost to the District. Changes or delays caused by Contractor's failure to perform "potholing" and interference location work shall not be eligible for extra work compensation or time extension.
 - g. Upon learning of the existence or location of any utility facility omitted from or shown incorrectly on construction drawings, or improperly marked or otherwise indicated, Contractor shall immediately notify the Engineer, providing full details as to depth below existing grade, location, size (outside diameter), and function. Contractor shall immediately notify utility having jurisdiction over facility.
3. Repair and Replacement of Existing Utilities:
- a. Contractor shall not interrupt or disturb any utility facility without authority from the utility company or order from the District. Where protection is required to ensure integrity of utility facilities located as shown on the Drawings or visible to Contractor or marked or otherwise indicated as stated herein, Contractor shall, unless otherwise provided, furnish and place all necessary protection at no additional cost to the District.
 - b. The Work requires Contractor to construct proposed pipelines and structures adjacent to existing utilities (water, sewer, gas, telephone, electric power, cable TV, compressed air, etc.) and existing improvements (sidewalks, driveways, pump stations, replenishment ponds, reservoirs, etc.). The Engineer and District do not have any information about compaction of trench backfill for said utilities and improvements. If said trench backfill fails during construction of proposed pipelines and structures, Contractor shall remove and replace said backfill, repair existing facilities (if damaged), compact as specified herein, and remove and replace any asphalt concrete pavement and Portland cement concrete as required, all at no additional cost to the District.
 - c. The Contractor shall have a sufficient supply of repair or replacement materials on the job site to repair or replace damaged or destroyed facilities including, but not limited to, sewer laterals, sewer mains, water mains, storm drains, irrigation lines, and water services. Repairs shall be made with like materials and said repairs shall be approved by the Engineer, and owners of damaged utilities prior to backfill.

4. Restoration:
 - a. After the completion of work in planted or improved areas within public or private easements, the Contractor shall restore such areas to original condition and in accordance with Kern County requirements.
 - b. Two (2) working days after the conclusion of the Contractor's work at each site/location, all remaining field markings related to the project made by the various utilities using USA shall be removed by the Contractor, as directed by the Engineer.

b. Site Clearing

1. Clearing, Grubbing, and Striping:
 - a. Clearing and grubbing shall be in accordance with Section 17-2 of the 2018 Caltrans Standard Specifications.
 - b. Prior to the start of clearing and grubbing operations, a field meeting shall be held with the Engineer to discuss limits and disposal of material.
 - c. The Contractor shall perform all clearing and grubbing work for areas within the work site. Such areas shall be cleared and grubbed of all trees, vines, stumps, roots, brush, rubbish, fences, pipes, concrete, and other unsuitable materials of any kind which would interfere with the performance or completion of the Work, create a hazard to safety, or impair the subsequent usefulness of the Work. Trees and other natural vegetation outside the actual lines of construction shall be protected from damage during construction, as directed by the Engineer.
 - d. The soil shall be stripped to a minimum depth of three (3) inches to remove the any organic laden topsoil from the following areas:
 - 1) Areas to receive fill:
 - 2) Areas within the Contractor's excavation lines
 - e. No waste materials from the clearing operation shall be incorporated into compacted backfill. Where directed by the Engineer, all work specified herein shall be accomplished by the Contractor prior to placement of construction stakes. All cleared, grubbed, and demolished materials shall become the property of the Contractor and shall be removed from the work site or District right-of-way before the date of completion of Contract or otherwise disposed of as approved by the Engineer. Upon completion of the work, the Contractor shall perform all required clean-up operations as directed, including all excavation, backfill and grading to lines shown on the Drawings or as directed in order to leave affected areas in a condition satisfactory to the Engineer. No materials or debris shall be burned.

- f. The Contractor shall inspect the site as to the nature, location, size, and extent of vegetative material to be removed or preserved as specified herein. Unless otherwise shown or specified, native trees larger than three inches in diameter at the base shall not be removed without the Engineer's approval. The removal of any trees, shrubs, fences, or other improvements outside of rights-of-way as deemed necessary by the Contractor, shall be arranged with the District, and shall be removed and replaced, at no additional cost to the District.
- g. Non-Hazardous Material Disposal: All non-hazardous asphalt concrete, concrete, metals, deleterious materials, brush, stumps, roots, vegetation and debris shall be removed from the site and disposed of in a manner acceptable to agencies having jurisdiction over the work and the District per applicable federal, state, and local laws and regulations.
- h. Hazardous Material Disposal: All hazardous material shall be removed from the site and disposed of in accordance with Section C – 38 of the General Conditions as applicable, in a manner acceptable to agencies having jurisdiction over the work, and the District per applicable federal, state, and local laws and regulations.
- i. Stockpiling: Topsoil shall be stockpiled within the project limits or as directed by the Engineer. Stockpile shall be placed, graded, and shaped to promote proper drainage of stockpile area.
- j. Permits: All permit requirements shall be complied with, during the course of the work, both for transportation and disposal of materials.

c. Earthwork

1. Construction Methods:
 - a. Adequate equipment and methods shall be employed to accomplish the work in accordance with applicable grading codes or County ordinances, these specifications, and the approved grading plans. If, in the opinion of the Engineer, unsatisfactory conditions such as questionable soil, poor moisture condition, inadequate compaction, and adverse weather, have resulted in a quality of work less than required in these specifications, the District may reject the work and recommend that construction be stopped until the conditions are rectified.
2. Control of Water:
 - a. The Contractor shall keep excavations free from water during construction.

3. Surplus Material:
 - a. Unless otherwise specified, surplus excavated material shall be disposed of in a legal manner at the Contractor's expense.
4. The Contractor shall satisfy himself that there is sufficient material available for the completion of the work before disposing of any material inside or outside the site. Shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by the Contractor at his expense.
5. Hauling:
 - a. When hauling is done over County highways or streets, the loads shall be trimmed, and the vehicle shelf areas shall be cleaned after each loading. The loads shall be watered after trimming to eliminate dust.
6. Maintenance of Roadways:
 - a. All earthwork operations shall be performed in a manner which does not disrupt the continuous flow of traffic on existing roadways. All streets shall be swept clean daily where dirt and debris result from contractor's operations.
7. Finish Grading:
 - a. Finish grades and existing or natural grades in the area of work are indicated on the plans. The Contractor shall do all grading, filling or excavating as required to completely grade the site to lines and grades shown, and to provide for the indicated drainage. Where finished grade corresponds practically with existing grade, the ground shall be worked up and graded off evenly with existing grade.
8. Tolerances:
 - a. Finished grade shall be to the line and grade shown on the plans to within a tolerance of plus or minus 0.05 ft. Allowance for topsoil and grass cover, and subbase and pavement thickness shall be made so that the specified thickness can be applied to attain the finished grade.
9. Control of Erosion:
 - a. The Contractor shall maintain earthwork surfaces true and smooth and protected from erosion. Erosion control measures shall be in accordance with Section D-30 – Special Conditions.
 - b. The Contractor can submit a Water Pollution Control Plan

d. Sheeting Shoring and Bracing of Trenches

1. The Contractor shall be solely responsible for the design of all cut slopes and installation of all temporary shoring systems. The maximum un-shored excavation slope during construction shall be 1-1/2:1 (H:V), per OSHA 1926 Subpart P Appendix A and B. Shoring, bracing, and benching shall be performed by the Contractor in accordance with the current edition of the California Construction Safety Orders.
2. Shoring systems shall be designed by a California Registered Civil Engineer to meet Cal OSHA regulations. The Contractor shall be responsible for providing the “competent person” required by OSHA standards to perform the excavation.
3. Trenches shall have sheeting, shoring and bracing conforming to CAL/OSHA requirements and the General Conditions. Lateral pressures for design of trench sheeting, shoring, and bracing shall be based on type of soil exposed in the trench, groundwater conditions, surcharge loads adjacent to the trench, and type of shoring that will be used in the trench.
4. Movable Trench Wall Supports:
 - a. The Contractor shall not disturb the installed pipe and its embedment when using movable trench boxes and shields. Movable supports shall not be used below the top of the pipe-bedding zone, or where moving results in trench wall erosion, unless Engineer approved methods are used for maintaining the integrity of embedment material. Before moving supports, place and compact embedment to sufficient depths to ensure protection of the pipe. As supports are moved, finish placing and compacting embedment.
5. Shoring Removal:
 - a. Care shall be taken by the Contractor to remove the shoring system and backfill the trench so as not to disturb the pipe foundation, bedding zone, or backfill materials. Any voids created by removal of support systems shall be filled and all materials compacted to the required percent compaction.

e. Pipe Earthwork

1. Trench Widths:
 - a. Unless otherwise shown on the drawings, the minimum trench width shall be 24-inches wider than the outside diameter of the pipe. The pipe shall be centered in the trench.
2. Grade:
 - a. Trenches shall be excavated to the lines and grades as shown on the drawings with allowance for the thickness of the pipe and bedding. If the trench is

excavated below the required grade, the portion of trench excavated below the grade shall be refilled with refill material at no additional cost to the District. Refill material shall be placed over the full width of the trench in compacted layers not exceeding 6 inches deep to the required grade. Hard spots that would prevent a uniform thickness of pipe bedding shall be removed. Before laying pipe sections, the grade shall be checked, and any irregularities corrected. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point.

3. Storage of Excavated Material:
 - a. During trench excavation, excavated material shall be stored only within the working area. Roadways or streets shall not be obstructed. The safe loading of trenches with excavated material shall conform to federal, State, and local laws.
4. Length of Open Trench:
 - a. The length of open trench shall be limited to 500 feet in advance of the pipe laying or amount of pipe installed in one working day.
 - b. Driveways and other traveled ways shall be backfilled or adequately bridged to provide safe access and egress at the completion of each day's work.
 - c. For work within the County Right of way, open excavations shall be backfilled at the end of each day or protected using K-rail and crash cushions to the satisfaction of the County Inspector.
5. Pipe Subgrade Preparation:
 - a. Pipe subgrade soils at the project area are expected to be suitable for support of the proposed Ductile Iron pipelines, with proper bedding and embedment placement as specified herein.
 - b. Loose, soft, or disturbed materials encountered at the subgrade level shall be removed until firm, unyielding material is encountered. If loose, soft, or unstable areas are encountered, these materials shall be over-excavated 12 inches or until a firm layer is encountered and replaced with compacted bedding material as specified herein.
 - c. If an unstable subgrade condition is still present at the bottom of the overexcavation, such as areas with perched groundwater, the use of a geotextile fabric will be required by the Engineer at the bottom of an over-excavated trench. The geotextile fabric shall be non-woven type installed per the manufacturer's recommendations. The geotextile fabric shall be placed, only after Engineer approval has been given to proceed, with trench

construction, at the bottom of the over excavated areas with crushed rock placed on it. The crushed rock shall be placed in lifts that are no more than 1-foot thick, then compacted using vibratory techniques up to the bottom of the pipe-bedding zone. The crushed rock layers shall be firm and unyielding, and the geotextile shall then be folded over the top (minimum 12-inch overlap) of the crushed rock layers before pipe bedding is placed.

- d. If cobble materials are encountered at the subgrade level, the pipe subgrade may be undulating and require over excavation to provide uniform bedding support with minimum bedding thickness below the pipe as specified in the Contract Documents. If over excavation is required to provide the minimum bedding thickness below the pipe, the subgrade shall be over-excavated a minimum of 12-inches and replaced with compacted bedding material.
 - e. In the event that groundwater is encountered at any of the anticipated trench depths, groundwater control measures shall be taken. Where the subgrade becomes disturbed due to localized seepage, surface water, or dewatering, the Contractor shall excavate the disturbed soils to a maximum depth of 2 feet and replace the disturbed soils with Engineer approved compacted bedding material.
 - f. The subgrade preparation recommendations presented above are also applicable to the foundations for above grade pipe supports, and appurtenant pipeline structures, such as manholes, and vaults.
6. Pipe Trench Compaction Requirements:
- a. Unless otherwise shown on the drawings or otherwise described in the specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as specified herein.
 - b. Compaction of materials by ponding and jetting is prohibited.
 - c. Material Testing:
 - 1) All imported or native materials shall be tested before the start of compaction operations to determine the moisture density relationship for materials with cohesive components, and the maximum density for cohesionless materials. Variations in imported or native earth materials may require a number of curves of the moisture-density relationship.
 - d. Consolidation of Crushed Rock:
 - 1) Crushed rock shall be consolidated by one of three methods, as follows:
 - a) A minimum of three passes with a vibrator plate compactor.

- b) Tamping of the crushed rock as it is placed, using the bucket of the backhoe.
 - c) Thoroughly wheel rolling with equipment.
 - 2) Each lift of rock shall not exceed 12 inches of unconsolidated thickness.
- e. Water Piping:
 - 1) Bedding:
 - a) The specified thickness of bedding material shall be placed over the full width of the trench. The top and bottom of the pipe bedding shall be graded ahead of the pipe laying to provide firm, uniform support along the full length of the pipe.
- f. Bell Holes:
 - 1) Bell holes shall be excavated at each joint to permit proper assembly and inspection of the entire joint.
- g. Pipe-Bedding Zone (Pipe Zone and Bedding Zone):
 - 1) After the pipe has been bedded, pipe zone material shall be placed simultaneously on both sides of the pipe, keeping level of backfill the same on each side. Material shall be carefully placed around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Particular care shall be taken in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling. Material placed within the pipe zone shall be compacted by hand tamping only.
 - 2) Pipe-bedding zone materials shall be placed and compacted in horizontal lifts to at least 95 percent relative compaction per ASTM D698. Material placed within 12 inches of the outer surface of the pipe shall be compacted by hand tamping equipment only.
- h. Trench Zone:
 - 1) Trench backfill settlement is anticipated to be one inch or less in street right of way areas and two inches or less in unpaved areas, provided the compaction recommendations of this section are followed.
 - 2) Backfill material shall be carefully deposited onto the backfill previously placed in the pipe zone. Free fall of material until at least two feet of cover is provided over the top of the pipe. Sharp, heavy

pieces of material shall not be dropped directly onto the pipe or the tamped material around the pipe. Special care shall be taken to avoid damaging the pipe when compacting trench backfill above the pipe.

- 3) The backfill shall be placed in 4 to 6 lifts when hand compacted and no greater than 8” lifts when power compacted to at least 95 percent relative compaction per ASTM D698 or at least 90 percent relative compaction per ASTM D1557.
- 4) The appropriate lift thickness of the backfill will depend on the compaction equipment used but generally shall not exceed a thickness of six inches of loose placed material.
- i. Foundation Stabilization:
 - 1) Rock refill material for foundation stabilization, where required shall be placed and consolidated to 95 percent relative compaction.
- j. Over-Excavation:
 - 1) Rock refill for over-excavation shall be placed and consolidated to 95 percent relative density.
- k. Equipment:
 - 1) Axle-driven or tractor-drawn compaction equipment shall not be used within 5 feet of walls and structures.
- l. Miscellaneous items, including, but not limited to, valves and fittings:
 - 1) Unless otherwise shown on the Drawings, compact the pipe zone to at least 95 percent relative compaction in accordance with ASTM D698 or 90% relative compaction per ASTM D1557.
- m. Compaction Testing Frequency

Pipe Bedding	1 test every 500 feet
Pipe Spring line	1 test every 500 feet
Top of pipe	1 test every 500 feet
Every 1 foot vertical height	1 test every 500 feet
Final grade of trench	1 test every 500 feet

7. Bedding Thickness:

- a. Thickness of the bedding shall be as shown on the drawings or as otherwise described in the specifications for the particular type of pipe installed, but in no cases shall the thickness be less than 6 inches.
8. Material Replacement:
 - a. Trenching and backfill material, which does not meet the specifications, shall be removed, disposed of, and replaced with Engineer approved material at no additional expense to the District.
 9. Foundation Stabilization:
 - a. After the required excavation has been completed, the Engineer shall inspect the exposed trench subgrade to determine the need for any additional excavation. It is the intent that additional excavation shall be conducted in all areas within the influence of the pipeline where unacceptable materials exist at the subgrade. Over excavation shall include the removal of all such unacceptable materials that exist beneath the bedding and to the depth required.
 - b. The presence of unacceptable material may require excavating a wider trench. The width and depth of known areas to be over excavated shall be shown on the drawings. The over excavated portion of the trench shall be backfilled to the subgrade of the bedding with refill material for foundation stabilization. Foundation stabilization material shall be placed over the full width of the excavation and compacted in layers not exceeding six inches in depth, to the required grade.
 10. Placement of CLSM
 - a. General
 - 1) Placement of CLSM shall be in accordance with Section F-a – Concrete and SSPWC 201-6.
 - 2) This paragraph applies to slurry placement, where applicable.
 - b. Preparation: Following excavation and subgrade preparation, remove all loose soil from trench walls and floor. Remove any unstable soil at the top of the trench which might fall into the trench during placement.
 - c. Placement
 - 1) As CLSM is placed in excavations it shall be thoroughly settled and compacted, throughout the entire depth of the layer, which is being consolidated, into a dense, homogeneous mass, filling all spaces and voids and bringing only a slight excess of water to the

- exposed surface. The CLSM shall be placed and consolidated by means that will not cause segregation of the mix.
- 2) If vibrators are used, they shall be high speed power vibrators (8,000 to 10,000 rpm) of an immersion type in sufficient number and with standby units as required. Vibrators shall not be used within 20 feet of connections to existing RCP.
 - 3) Contractor shall use placement methods that ensure that the CLSM completely fills the trench around the pipe, including spaces and voids around the pipe, spaces between pipes, keyways in trench plugs, and spaces and voids around adjacent and crossing utilities. The placement method shall achieve complete consolidation and contact between the CLSM, the pipe, thrust blocks, and the trench walls.
 - 4) CLSM shall be continuously placed against fresh material unless otherwise directed by the Engineer. When new material is placed against existing CLSM, the placement area shall be free from loose and foreign material. The surface of the existing material shall be soaked a minimum of one (1) hour before placement of fresh material but no standing water shall be allowed when placement begins.
 - 5) When placed, temperature of the CLSM shall be between 50 and 90 degrees F. CLSM shall not be placed when the air temperature is below 40 degrees F. No CLSM shall be placed against frozen subgrade or other materials having temperature less than 32 degrees F. CLSM shall not be placed in pipe trenches during inclement weather or when the trench contains water.
 - 6) To prevent flotation of the pipe, Contractor shall place the fresh CLSM in two or more lifts, with each lift reaching an initial set before the succeeding fresh CLSM is placed. Contractor shall be responsible for prevention and, if necessary, correction of flotation and displacement of the pipeline due to the use of CLSM. No movement of the pipe caused by flotation shall be allowed. If any movement occurs, CLSM shall be removed and the pipe placed back on line and grade. Any damage to the pipeline system caused by movement of the pipe shall be removed and/or repaired at no additional cost to the District.
- d. Finishing: The finish surface shall be smooth and to the grade indicated or directed by the Engineer. Surfaces shall be free from fins, bulges, ridges, offsets, and honeycombing. Finishing by wood float, steel trowel, or similar methods is not required.

- e. Curing: CLSM shall be kept damp for a minimum of seven (7) days or until final backfill is placed.
 - f. Protection
 - 1) CLSM shall be protected from freezing for seventy-two (72) hours after placement.
 - 2) Placement of backfill or concrete on top of or against the CLSM is not allowed until the CLSM passes a ball drop test described in ASTM D 6024.
 - 3) CLSM shall be protected from running water, rain, and other damage until the material has been accepted and final fill completed.
 - g. Sampling and Testing
 - 1) Sampling and Testing of CLSM shall be in accordance with Section F – Concrete.
 - a) Sampling shall be in accordance with ASTM D 5971.
 - b) Compression testing shall be in accordance with ASTM D 4832.
 - c) Setting test shall be in accordance with ASTM C 403.
 - d) Density tests shall be in accordance with ASTM C 138.
11. Import or Export of Backfill Material:
- a. Excess Material
 - 1) Excess excavated soil material shall be removed and disposed of off the project site at no additional expense to the District.
 - 2) Excess soil material shall be disposed of in a legal manner and in accordance with local regulations.
 - b. Imported Material:
 - 1) Any additional backfill material necessary to return all grades to plus or minus 0.2 feet from the grade encountered at the beginning of construction or as shown on the contract drawings shall be imported, placed, and compacted at no additional expense to the District.
 - f. Structural Earthwork**
 - 1. General**

- a. Excavation shall include the removal of all materials of whatever type encountered, including all obstructions of any type and size that would interfere with the proper execution and completion of the Work. Prior to excavation the entire construction site shall be cleared and grubbed. The Contractor shall furnish, place and maintain excavation supports and shoring that may be required for the excavation. It is the Contractor's responsibility to ensure adequate safety during all construction Work, including excavation.
 - b. Subgrade surfaces shall be clean and free of loose material of any kind when concrete or crushed rock base is placed thereon.
 - c. Blasting
 - 1) Blasting or other use of explosives for excavation will not be permitted.
- 2. Testing For Compaction**
- d. All excavations are subject to compaction tests.
 - e. The location and frequency of tests shall be at the Engineer's discretion.
 - f. In general, the tests shall be taken at:
 - 1) Structure Fill, Backfill, and Base
 - a) One (1) per lift of fill, per 100 square feet of foundation/slab plan area, or for every 500 cubic yards of completed fill, whichever is more frequent.
- g. Compaction Compliance**
- 1) Compaction shall be deemed to comply with the specifications when none of the tests falls below the specified relative compaction. The Contractor shall provide a written report of testing compliance prior to placement of additional fill or backfill.
- h.** The presence of marginal materials, poor soil conditions or a prevalence of failed test results will be cause for substantially increasing the frequency and intervals of required testing. Alternatively, with approval of the Engineer, approved areas may be backfilled with a two-sack sand-cement slurry at no additional cost to the District.

- i. Material placed between successful test and failed test shall be retested until a passing test is achieved. All material from failed test to successful test shall be removed, recompacted and retested at no additional cost to the District.

4. Dewatering

a. General

- 1) As required, dewatering operations shall continuously remove and dispose of all water entering the excavation during construction of the structure and all backfill operations. Water shall be disposed of in a manner to prevent damage to adjacent property and pipe trenches in conformance with all local regulations. Water shall not be allowed to rise in the excavation until backfilling around and above the structure is completed.

b. Notification

- 1) The Engineer shall be notified 48 hours prior to commencement of dewatering operations. Methods employed shall be in conformance with an NPDES permit.

5. Structure Excavation

a. General

- 1) The Contractor shall perform all excavation required to construct or furnish and install structures to the lines and grades as specified or shown on the Drawings or to such lines and grades as are directed by the Engineer or his representative.
- 2) Except where otherwise shown or directed by the Engineer or his representative, excavation for structures shall be carried to the grade of the bottom of the footing or slab.
- 3) The Contractor shall prepare the foundations at structure sites by methods which will provide firm foundations for the concrete structures. The bottom and side slopes of excavation upon or against which concrete is to be placed shall be finished to the prescribed dimensions, and the surfaces so prepared shall be moistened and tamped with suitable tools for the purpose of thoroughly compacting them and forming firm foundations upon or against which to place the concrete structures.

b. Excavation

- 1) Excavation shall extend to a minimum of five feet beyond the structure in all directions.
- c. Subgrade Preparation
- 1) The upper 12 inches of exposed subgrade shall be scarified, moisture-conditioned to not less than optimum moisture content, and recompacted to a minimum of 95 percent relative compaction per ASTM D1557.
- d. Removal of Material
- 1) Structure excavation shall include the removal of all material necessary for the construction of underground structures and foundations.
- e. Clearance
- 1) Unless noted otherwise on the Drawings, the sides of excavations for structures shall be sufficient to leave at least a 2-foot clearance, as measured from the extreme outside of formwork or the structure. In no case shall excavation faces be undercut for extended footings.
- f. Unsuitable Subgrade Material
- 1) If the subgrade of excavation is in material that is deemed by the Engineer to be unsuitable for providing adequate foundation support it shall be excavated an additional two (2) feet uniformly below bottom of over-excavation and two (2) horizontally beyond and all around foundation, or as directed by the Engineer.
- g. Overdepth Excavations
- 1) Overdepth excavations shall be corrected by backfilling with crushed rock or concrete, as directed by the Engineer.
 - 2) No native earth backfill will be permitted to correct overdepth excavation beneath structures.
 - 3) If directed by the Engineer, complete encapsulate the crushed rock.
- h. Foundation Inspection
- 1) Whenever any structure excavation is substantially completed to grade, the Contractor shall notify, 48-hours in advance, the Engineer who will make an inspection of the foundation for uniformity and suitability as a structure foundation.

- 2) No geotextile fabric, gravel, rock, sand, concrete shall be placed until the foundation has been inspected and approved by the Engineer.
 - 3) The Contractor shall, if directed by the Engineer, dig test pits and make test borings and foundation bearing tests. If the material tested complies with the specifications, the cost thereof will be paid for as extra work. If the material tested does not comply with the specifications, the cost thereof (initial testing, remedial work, retesting) will be borne by the Contractor.
- i. Excess Material
- 1) Excess material shall be properly disposed.
- j. Geotextile
- 1) Geotextile fabric shall be installed in strict accordance with the manufacturer's instructions.
 - 2) If shown on the drawings, geotextile fabric shall be placed prior to the crushed rock base.
 - 3) Inspection
 - a) When the geotextile fabric has been placed, the Contractor shall notify, 48-hours in advance, the Engineer who will make an inspection of the geotextile fabric installation for uniformity and suitability for completely encapsulating the crushed rock base.
 - b) No gravel or rock shall be placed until the geotextile placement has been inspected and approved by the Engineer.
- k. Crushed Rock Base
- 1) Unless otherwise shown or specified, the base material shall be completely encapsulated (top, bottom, and sides) in geotextile fabric. The minimum overlap of the geotextile fabric shall be twelve (12) inches. Geotextile fabric shall be placed according to manufacturer's recommendations and as specified herein.
 - 2) Inspection
 - a) When the crushed rock has been placed and the geotextile fabric has been installed, the Contractor shall notify, 48hours in advance, the Engineer who will make an inspection of the completed base for uniformity and suitability as a structure foundation.

- b) No structure shall be placed until the crushed base encapsulated in geotextile has been inspected and approved by the Engineer.
6. Support For Excavations for Structures
- a. Safety
- 1) A safe working area shall be provided for workers. The services of a Registered Civil Engineer shall be obtained to design sheeting, shoring and bracing, or side slopes. The requirements of CAL/OSHA and of these specifications shall be used as minimum design criteria. Sufficient geotechnical data shall be obtained to provide safe design.
- b. Side Slopes
- 1) Minimum side slope shall be per CAL/OSHA and the Project Geotechnical Investigation Report, but not steeper than:
 - 2) Clayey soil up to 12 foot depth: 3/4 horizontal to 1 vertical (3/4:1).
 - 3) Clayey soil more than 12 foot depth: vary from 3/4:1 for 12 foot depth to 3:1 for 20 foot depth.
 - 4) Gravelly soil: 2 horizontal to 1 vertical (2:1).
 - 5) Flatten above slopes if groundwater is present.
- c. Traffic Safety
- 1) Methods of support or side slopes shall be selected to provide sufficient clearance for public traffic safety and convenience.
- d. Design Loads
- 1) The characteristics of the soil exposed in the excavation, the groundwater conditions, traffic, and other surcharge loads shall be considered when selecting lateral pressures to be used for design of soil supporting systems.
- e. Verification of Soil Types
- 1) Prior to design and submittal of support system, verification of the type of soil below the bottom of the excavation shall be made by District approved soils testing laboratory.
 - 2) Contractor is responsible for scheduling soil sampling and testing with the Engineer and shall give at least five days' notice prior to required sampling.

7. Backfill Against Walls

a. General

- 1) After completion of construction below the elevation of the final grade, and prior to backfilling, forms shall be removed and the excavation shall be cleaned of all trash and debris.

b. Precautions

- 1) Backfill shall not be placed against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, the backfill shall be placed uniformly on both sides. Where backfill is to be placed around a structure, the backfill shall be placed at a uniform rate around the structure.
- 2) Backfill shall not be placed against the walls of structures that are laterally restrained or supported by suspended slabs or slabs on grade until the slab is placed and the concrete has reached the specified compressive strength.
- 3) When backfill is to be placed before seven-day concrete strength tests have been conducted on thrust blocks, the concrete shall have achieved 50 percent of the specified minimum 28-day compressive strength. An additional test cylinder shall be made for this test.

c. Equipment

- 1) Equipment weighing more than 10,000 pounds shall not be used closer to walls and structures than a horizontal distance equal to the depth of fill at the time.

8. Compaction

a. Compaction for Zones

- 2) Compaction shall be controlled to the percentage of density specified for each zone.

b. Moisture Control

- 1) Moisture shall be controlled as follows:
 - a) Where subgrade or soil material layers must be moisture conditioned before compaction, water shall be uniformly applied to the subgrade surface or soil layer material in order to prevent free water from appearing on the surface during or subsequent to compaction operations. The moisture content of the compacted soil shall be within three percentage points of the optimum.
 - b) Soil material that is too wet to permit compaction to specified density shall be removed and replaced or scarified and air dried.
 - c) Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread within a District approved area and allowed to dry. Drying may be assisted by discing, harrowing or pulverizing, until moisture content is reduced to satisfactory value.
 - d) Backfill or fill material shall not be placed on surfaces that are muddy, frozen, or contain frost or ice.
- c. Requirements Prior to Backfilling
 - 1) Excavations shall be backfilled as work permits, but not until completion of the following:
 - a) Inspection, testing, approval, and recording locations of underground utilities.
 - b) Removal of concrete formwork per Section F-a – Concrete.
 - c) Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures at a point directed by the Engineer and remove in manner to prevent settlement of the structure or utilities, or leave in place, if required.
 - d) Removal of trash and debris.
 - e) Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- d. Backfill Layers
 - 1) Backfill and fill materials shall be placed in layers not more than six inches in loose depth for material compacted by heavy compaction

equipment, and not more than four inches in loose depth for material compacted by hand-operated tampers.

- 2) Backfill shall be brought up uniformly about any structure, and at no time during backfilling operations shall the differential elevation at the top of backfill on any two sides of a structure exceed one (1) foot. Each layer of compacted backfill shall be inspected and approved by the Engineer before placement of any subsequent layer of material, including testing for specified densities.

e. Jetting

- 1) Unless specified otherwise, jetting techniques shall not be employed to densify granular fill materials.

g. Maintenance:

a. Protection of Graded Areas

- 1) Newly graded areas shall be protected from traffic and erosion. Settled, eroded, and rutted graded areas shall be repaired and re-established to specified tolerances.

b. Reconditioning Compacted Areas:

- 1) Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, these areas shall be scarified, re-shaped, and compacted to required density prior to further construction.

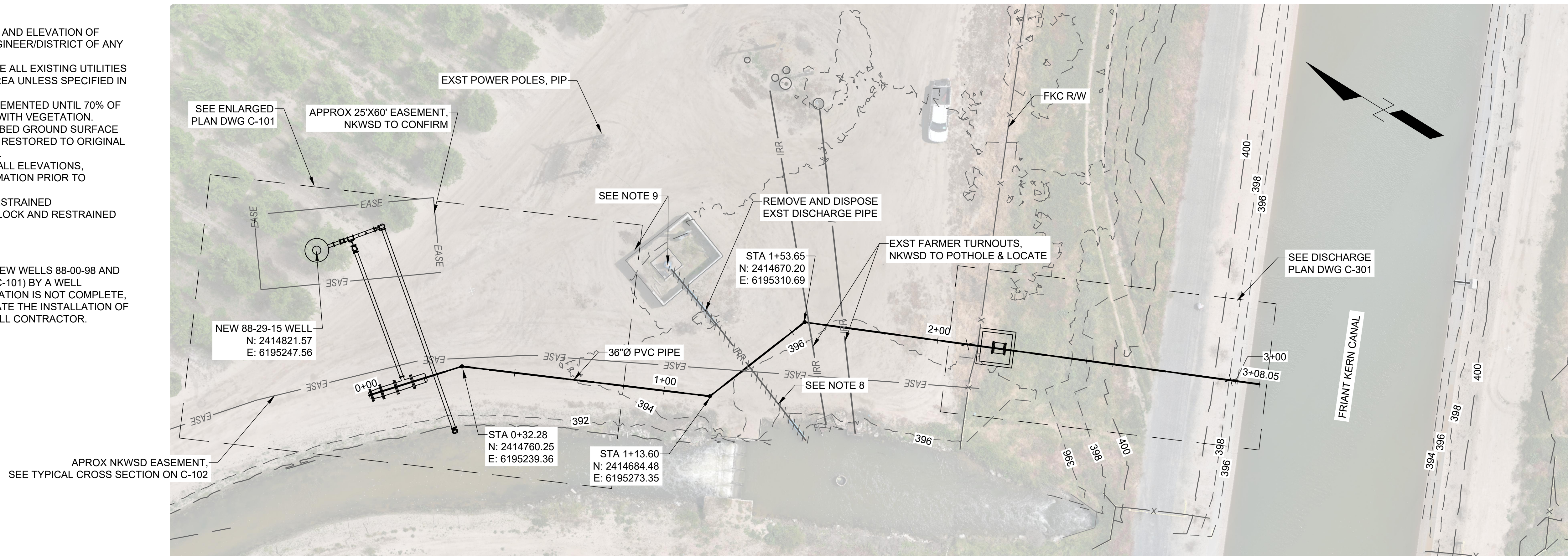
h. Clean Up

- a. After completing all earthwork, the Contractor shall leave the site in a neat and clean condition, doing all such grading as is required by the plans. Any existing features, structures, and other facilities damaged or affected by the work shall be replaced, repaired, or restored to their original condition or better.

****END OF SECTION****

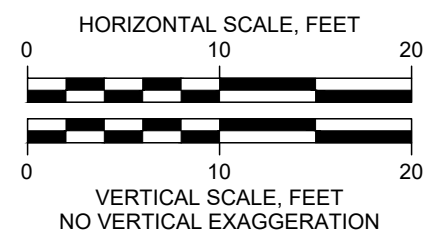
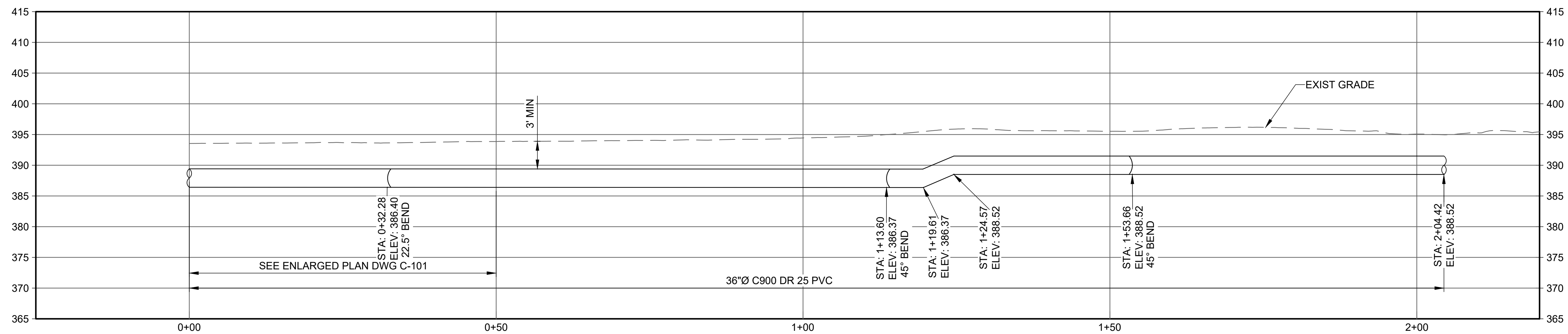
GENERAL NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND NOTIFY ENGINEER/DISTRICT OF ANY DISCREPANCIES.
2. CONTRACTOR TO PROTECT-IN-PLACE ALL EXISTING UTILITIES AND FACILITIES WITHIN PROJECT AREA UNLESS SPECIFIED IN DRAWINGS.
3. EROSION CONTROLS SHALL BE IMPLEMENTED UNTIL 70% OF THE DISTURBED AREA IS COVERED WITH VEGETATION.
4. AFTER CONSTRUCTION, ALL DISTURBED GROUND SURFACE AND MAINTENANCE ROAD SHALL BE RESTORED TO ORIGINAL CONDITION WITH SIMILAR MATERIAL.
5. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS, DIMENSIONS, AND PRODUCT INFORMATION PRIOR TO CONSTRUCTION.
6. ALL JOINTS & FITTINGS SHALL BE RESTRAINED
7. SEE CG-04 TO CG-06 FOR THRUST BLOCK AND RESTRAINED JOINT BENDS
8. NOT USED
9. NOT USED
10. THE DISTRICT WILL BE INSTALLING NEW WELLS 88-00-98 AND 88-29-015 (DWGS CC-01, CB-01, AND C-101) BY A WELL CONTRACTOR. IF THE WELL INSTALLATION IS NOT COMPLETE, THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE WELL DISCHARGE WITH THE WELL CONTRACTOR.



88-29 PIPELINE PERMANENT DISCHARGE

SCALE: 1"=20'



ISSUE FOR BID

<p>Attention:</p> <p>If this scale bar does not measure 1" then drawing is not original scale.</p>		<p>Designed: C. FANJOY</p> <p>Drawn: C. FANJOY</p> <p>Checked: M. MARTIN</p> <p>Approved: M. MARTIN</p> <p>P.E. No: 35079</p> <p>GEI Project 2202819</p>	<p>GEI CONSULTANTS, INC. 2888 PROSPECT PARK DRIVE SUITE 400 RANCHO CORDOVA, CA 95670 (916)631-4500</p>	<p>NORTH KERN WATER STORAGE DISTRICT 2020 DRP RETURN CAPACITY PROJECT NK-623</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">NO</td> <td style="width: 15%;">DATE</td> <td style="width: 40%;">ISSUE/REVISION</td> <td style="width: 10%;">APP</td> </tr> <tr> <td>1</td> <td>02/29/24</td> <td>Addendum 2</td> <td>MM</td> </tr> <tr> <td>0</td> <td></td> <td></td> <td></td> </tr> </table>	NO	DATE	ISSUE/REVISION	APP	1	02/29/24	Addendum 2	MM	0				<p>SHEET NAME</p> <p>88-29 WELLS PLAN AND PROFILE STA 0+00 TO 2+04</p>	<p>DWG. NO.</p> <p>CB-01</p> <p>SHEET NO.</p> <p>11 OF 27</p>
NO	DATE	ISSUE/REVISION	APP																
1	02/29/24	Addendum 2	MM																
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