SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Kern County, California

SSJMUD

NOTICE TO PLANHOLDERS

Attached is

Addendum No. 2

to Specification No. SSJMUD 25-01

for constructing the

DRIVER ROAD PIPELINE PROJECT

SIGN AND RETURN THIS NOTICE WITH YOUR PROPOSAL

2/25/2025

Date: February 25, 2025

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.

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

ADDENDUM NO. 2

TO THE SPECIFICATIONS NO. 25-01 for the DRIVER ROAD PIPELINE PROJECT

The Specifications No. 25-01 is hereby changed and/or clarified as follows.

1. **Specification Changes**

    a. **02223 EXCAVATION, BACKFILLING, AND COMPACTING**

        i. On page 02223-8 replace Section 3.01 B. 1. in entirety with the following.

            "1. The Contractor shall keep excavations free from water during construction in accordance with Section D-22."

        ii. On page 02223-11 replace Section 3.05 A. in entirety with the following.

            "A. Dewatering shall be in accordance with Section D-22. 02140 – Dewatering."

        iii. On page 02223-12 replace the first sentence of Section 3.10 E. in entirety with the following.

            "E. In the event that groundwater is encountered at any of the anticipated trench depths, groundwater control measures shall be taken in accordance with Section D-22."

2. **Drawings**

    a. CG-01 is revised as shown attached.

3. **Questions**

    a. *Details for work in paved and unpaved areas seem reversed, please verify. On CG-01 drawing 16 of 21 compaction requirements for the trench are 95 percent in unpaved areas and 90 percent in paved areas. Please clarify thank you.*

        Compaction requirements in the trench zone for unpaved and paved zones inside the county ROW shall be 95% per CAL TRANS 216/231.

b. *Please verify who is responsible for construction survey and compaction testing services.*

The Contractor is responsible for construction survey. See specification section D-11. Except for the initial design survey and site control points provided in the drawings, the Contractor shall establish all site survey control and construction staking survey necessary to perform the Work including establishing property lines and corners for private property if required and as built information.

The Contractor is responsible for compaction testing. See specification section D-13. Testing of materials for construction (soils, concrete, compaction, etc.) will be provided by the Contractor. In the event of a failed test, the Contractor shall be responsible to pay for all costs associated with retesting.

c. *What is required to de-water existing pipelines?*

It is anticipated that de-watering of existing pipelines will be limited to removing residual water left in the pipeline after the District's irrigation shut down period. The Contractor shall coordinate with the District about where to discharge any water.

4. Attachments

a. Planholders List

b. Specifications

i. 02223 EXCAVATION, BACKFILLING, AND COMPACTING

c. Drawings

i. CG-01

Southern San Joaquin Municipal Utility District
SSJMUD 25-01 – Driver Road Pipeline Project
Planholders List – Addendum 2

COUNT	ISSUED TO	CONTACT
-	Kern County Builders Exchange	sgeissel@kcbex.com admin@kcbex.com
-	Dodge Data and Analytics	dodge.bidding@construction.com support@construction.com projectdata@construction.com
	ConstructConnect	maria.delfino@constructconnect.com
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2	MAC General Engineering Inc.	Nathan Delk ndelk@macgeneralengineering.com
3	Superior Ag Construction	Donna Alexander superioragconstructioninc@yahoo.com
4	Westberry Construction, Inc.	Will Westberry westberryconstruction@yahoo.com
5	Hartzell General Engineering Contractor, Inc.	Charles Hartzell charles@hartzellco.com
6	Laurel Ag & Water	Curtis Lutje clutje@laurel-ag.com
7	Todd Co.	Jared Steele flo@jt2inc.com
8	Nicholas Construction, Inc.	Alex Silicz alex@nicholasconstructioninc.com
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11	Pacific Boring	Ted Miller ted@pacificboring.com

SECTION 02223

EXCAVATION, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.01 DESCRIPTION

A. This section describes the requirements for protection and location of existing utilities and facilities; and materials, testing, and performance of trench excavation, backfilling, and compacting.

B. The requirements include excavating, backfilling, and compacting for the following:

1. Water Pipelines;
2. Fittings;
3. Air Valve Assemblies;
4. Thrust Blocks; and
5. Other items, as shown.

C. For projects located in the County right-of-way, Kern County's approved encroachment permit requirements shall take precedence over the requirements specified herein.

D. All materials used and work performed shall be in strict accordance with the Project Geotechnical Investigation Report.

1.02 RELATED SECTIONS

A. 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:

1. Section 01551 – Traffic Control.
2. Section 02115 Demolition
3. Section 02220 – Structural Earthwork
4. Section 02578 – Pavement Removal and Replacement.
5. Section 03300 – Concrete.
6. Section 15051 – Installation of Pressure Pipelines.

1.03 REFERENCES

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

1. American Society for Testing and Materials (ASTM):
    a. ASTM C 138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
    b. ASTM C 403 – Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
    c. ASTM D 2321 – Underground Installation of Thermoplastic and Sewers Other Gravity-Flow Applications.
    d. ASTM D 4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
    e. ASTM D 5971 – Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material.
    f. ASTM D 6024 – Standard Test Method for Ball Drop on Controlled Low Strength Material (CLSM) to Determine Suitability for Load Application.
2. California Test (CT):
    a. CT-216 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates.
    b. CT-231 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gauge.
3. Cal/OSHA (California Title 8, Division 1, Chapter 4).
4. California Department of Industrial Safety.
5. Standard Specifications, State of California Department of Transportation (Caltrans), latest edition.
6. California Labor Code – Section 6705.
7. Construction Safety Orders of the California Division of Industrial Safety.
8. Kern County Encroachment Permit.
9. Geotechnical engineering Investigation Proposed SWID Farmer's Co-Op Pipeline Project, February 10, 2022.
10. Standard Specifications for Public Works Construction (SSPWC):
    a. SSPWC 201-6 – Controlled Low Strength Material (CLSM)

1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit the following:

1. 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.
2. Copy of the excavation permit issued by the California Department of Industrial Safety.
3. Excavation equipment specifications and methods.
4. Compaction methods and equipment specifications.
5. Placement methods.
6. Material samples and grain size analyses shall be submitted for any imported fill and/or engineered fill material used.
7. The slurry and CLSM mix designs, prepared by the manufacturer, showing compliance with the specified properties.
8. Six copies of a report from a testing laboratory shall be submitted verifying that backfill material conforms to the specified gradations or characteristics.
9. Such other samples of materials as the Engineer may require.

1.05 QUALITY ASSURANCE

A. All materials, equipment, and installation methods shall be in accordance with the Project Geotechnical Investigation Report.

B. 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.

C. Place and maintain barricades and safety signs as needed for safety and as required by Section 01551 – Traffic Control.

D. Comply with the Kern County Encroachment Permit and Cal/OSHA codes and regulations.

E. Rework work not meeting the specified requirements, as determined by the Engineer, at no additional cost to the District.

F. 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.

G. Completed subgrade elevations shall be within 0.05 foot of design subgrade.

1.06 FIELD CONTROL

A. Barricades, cones, safety signs, etc. shall be placed and maintained as required by pertinent safety regulations.

B. 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.

1.07 PROTECTION AND LOCATION OF EXISTING UTILITIES AND FACILITIES

A. The protection and location of existing utilities and facilities shall be in accordance with Section 02624 – Exploratory Excavations.

1.08 PROTECTION OF LANDOWNER FACILITIES

A. 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.

1.09 DEFINITION OF ZONES

A. Pavement Zone

1. The pavement zone shall include the asphaltic concrete and aggregate base pavement section placed over the street zone. This zone is often referred to as the “structural section” of the street or highway.

B. Trench Zone

1. The Trench Zone shall include the portion of the trench from the top of the pipe zone to the bottom of the pavement zone in paved areas or to the existing surface in unpaved areas.

C. Pipe Zone

1. The Pipe Zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 6-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.

D. Bedding Zone

1. 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"

E. Pipe-Bedding Zone

1. 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 6-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 6-inches over it.

1.10 TESTING FOR COMPACTION

A. The Contractor shall cooperate with the District provided soils testing lab to take samples during placement of materials and test for moisture content, density, compaction, gradation, and classification to ensure conformance with these specifications.

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

C. Relative Compaction

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

D. Compaction Compliance

1. Compaction shall be deemed to comply with the specifications when none of the tests fall below the specified relative compaction.

E. Testing Intervals

1. Testing of Pipelines shall be completed at the following intervals:
    a. 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.
    b. These tests shall also be performed for every 1,500 cubic yards of material placed.
    c. 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. These test requirements shall be repeated every 300 feet of trench length, or as directed by the Engineer.

F. 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.

G. 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.

PART 2 PRODUCTS

2.01 PAVEMENT ZONE MATERIALS

A. Pavement zone materials shall be as specified in Section 02578 – Pavement Removal and Replacement.

2.02 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 or III 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.

2.03 BACKFILL MATERIAL – PIPE-BEDDING ZONE

A. The pipe-bedding zone is defined above in Part 1 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.

2.04 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 or III 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.

2.05 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.

2.06 WATER FOR COMPACTION

A. Water used to assist in compaction shall be potable water unless otherwise approved by the Engineer.

B. Refer to Section D-7 for additional information regarding availability and use of District water.

2.07 SAND-CEMENT SLURRY

A. Sand-Cement slurry shall only in the locations designated on the plans.

B. Where Sand-Cement slurry is required, it shall consist of one sack (94 pounds) of Class V Portland cement per cubic yard of sand and sufficient moisture for workability.

2.08 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. 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.

B. CLSM shall have a minimum 28-day compressive strength of not less than 300 psi.

2.09 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.

PART 3 EXECUTION

3.01 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.

B. Control of Water

1. The Contractor shall keep excavations free from water during construction in accordance with Section D-22. ~~02140 – Dewatering.~~

C. Surplus Material

1. Unless otherwise specified, surplus excavated material shall be disposed of in a legal manner at the Contractor's expense.
2. 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.

D. Hauling

1. 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.

E. Maintenance of Roadways

1. 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.

F. Finish Grading

1. 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.

G. Tolerances

1. 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.

H. Control of Erosion

1. The Contractor shall maintain earthwork surfaces true and smooth and protected from erosion. Erosion control measures shall be in accordance with Article D-29 of Section D – Special Conditions.

3.02 SITE CONDITIONS

A. Examine the area and conditions under which work of this section will be done. Correct conditions detrimental to timely and popper completion of the work. Do not proceed until satisfactory conditions are corrected.

3.03 SHEETING SHORING AND BRACING OF TRENCHES

A. 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.

B. 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.

C. 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.

D. Movable Trench Wall Supports

1. 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.

E. Shoring Removal

1. 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. Resulting voids shall be filled with sand and cement slurry or another Engineer approved grout mix.

2. Where shoring cannot be removed without causing voids or disturbance to nearby project features that cannot be rectified, in the opinion of the Engineer, the shoring shall be cut off 1.5-feet above the pipe and left in place as directed by the Engineer. Leave rangers, whalers, braces, etc. in place as required to support cutoff sheeting and the trench wall in the vicinity of the pipe-bedding zone. Timber sheeting to be left in place is considered a permanent structural member and shall be treated against biological degradation as required, and against decay if above ground water. Preservative and protective compounds that react adversely with thermoplastics are not allowed.

3.04 OPEN TRENCH EXCAVATION

A. Any excavation within the street area subject to traffic loads shall be covered at all times with steel plating when not in use. The steel plating shall be of a thickness adequate to withstand the traffic loads that may be imposed and securely anchored at all times within temporary pavement to prevent displacement of the plate by traffic vibration. Detours,

lane closures, street closures, traffic channelization, barricading and lighting of all excavations shall conform to Section 01551 – Traffic Control, and all requirements specified in the approved traffic control plan.

3.05 DEWATERING

A. Dewatering shall be in accordance with Section D-22. ~~02140 – Dewatering.~~

3.06 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.

3.07 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.

3.08 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.

3.09 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.

3.10 PIPE SUBGRADE PREPARATION

A. Pipe subgrade soils at the project area are expected to be suitable for support of the proposed PVC 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 over-excavation, 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, as specified in Section 02220 – Structural Earthwork and 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 crusted 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 in accordance with Section D-22. ~~02140 – Dewatering.~~ Loss of fines due to seepage or dewatering can cause soil voids in the vicinity of the pipe. 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.

3.11 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. Asphalt Concrete Pavement with Aggregate Base

1. Compaction of Aggregate Base shall be in accordance with Kern County Standards and Section 02578 – Pavement Removal and Replacement.

F. 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.
2. Bell Holes
    a. Bell holes shall be excavated at each joint to permit proper assembly and inspection of the entire joint.
3. Pipe-Bedding Zone (Pipe Zone and Bedding Zone)
    a. 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.

b. Pipe-bedding zone materials shall be placed and compacted in horizontal lifts to at least ~~95~~ 90 percent relative compaction per CT-216. Material placed within 12 inches of the outer surface of the pipe shall be compacted by hand tamping equipment only.

4. Trench Zone

a. 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.

b. 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.

c. Backfill in the trench zone within the County right of way, greater than 30 inches below the pavement zone, or the top of ground surface, shall be compacted to not less than 95 percent relative compaction per CT-216.

d. In unpaved areas, outside of the County right of way, the backfill shall be compacted to at least 95 percent relative compaction per CT-216.

e. 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.

5. Foundation Stabilization

a. Rock refill material for foundation stabilization, where required shall be placed and consolidated to 95 percent relative density.

6. Over-Excavation:

a. Rock refill for over-excavation shall be placed and consolidated to 95 percent relative density.

G. Equipment

1. Axle-driven or tractor-drawn compaction equipment shall not be used within 5 feet of walls and structures.

H. Pavement Zone Backfill

1. Pavement zone backfill shall be done in accordance with the requirements and satisfaction of Kern County.

I. 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~~ 90 percent relative compaction in accordance with CT-216.

3.12 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.

3.13 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.

3.14 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.

3.15 PLACEMENT OF CLSM

A. General

1. Placement of CLSM shall be in accordance with Section 03300 – Concrete and SSPWC 201-6.

2. This paragraph applies to slurry placement, where applicable.

B. Preparation

1. 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

1. 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

1. 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 03300 – 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.

3.16 PAVEMENT CUTTING REQUIREMENTS

A. AC pavement shall be removed and replaced in accordance with Kern County Standards, and Section 02578 – Pavement Removal and Replacement.

3.17 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.

3.18 MOISTURE CONTENT OF BACKFILL MATERIAL

A. During the compacting operations, optimum practicable moisture content required for compaction purposes shall be maintained in each lift of the backfill material. Moisture content throughout the lift shall be maintained at a uniform level. If placement is discontinued and proper moisture content not maintained, the upper layer shall be brought back to proper moisture content by sprinkling, cultivating and rolling the backfill material before placing new material. At the time of compaction, the water content of the material shall be at optimum water content plus two or minus zero percentage points. Material which contains excessive moisture shall not be worked to obtain the required compaction. Material having excessive moisture content may be dried by blading, discing, or harrowing to hasten the drying process.

3.19 FOUNDATIONS FOR BELOW-GRADE STRUCTURES

A. Backfill and compaction of below-grade structures shall be in accordance with Section 02220 – Structure Earthwork and Section 03461 – Precast Concrete Manholes.

3.20 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.

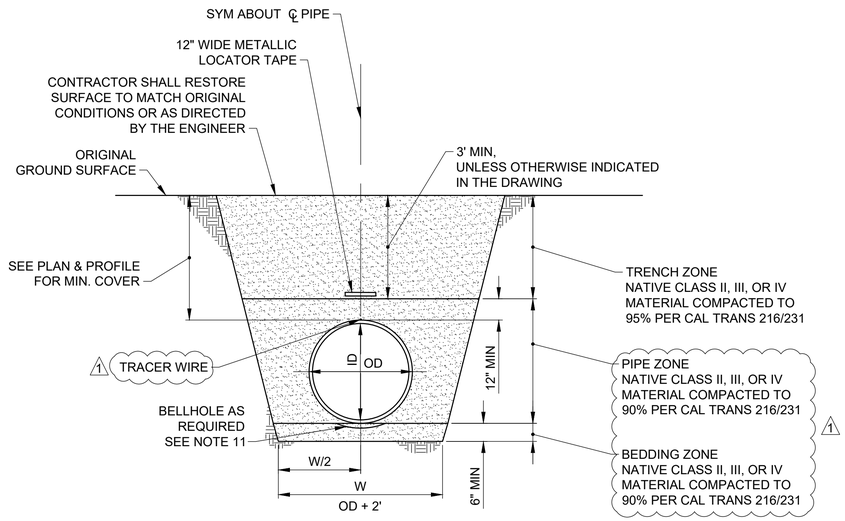
B. Reconditioning Compacted Areas

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.

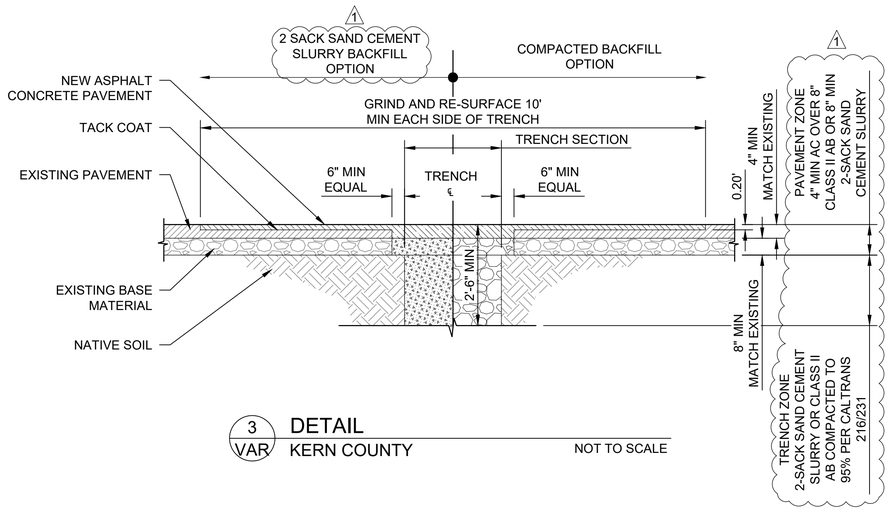
3.21 CLEAN UP

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****



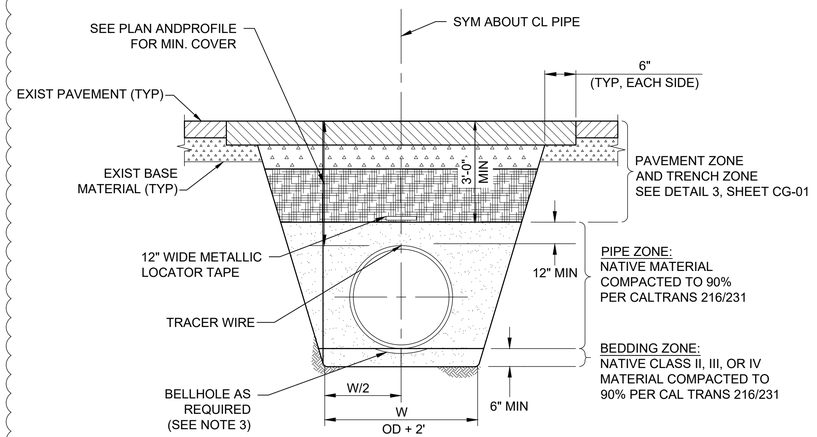
1 VAR ALL TYPES AND SIZES OF PIPE IN UNPAVED AREAS IN COUNTY ROW
NO SCALE



3 VAR DETAIL
KERN COUNTY
NOT TO SCALE

KERN COUNTY NOTES:

1. AFTER EXCAVATION HAS BEEN BACKFILLED, THE EXISTING PAVEMENT SHALL BE REMOVED TO A LINE AT LEAST 6-INCHES BACK TO THE FIRM BANKS OF THE TRENCH ("T-CUT"), ON EACH SIDE.
2. WITHIN 30 CALENDAR DAYS AFTER BACKFILLING, ASPHALT CONCRETE SHALL BE PLACED AND COMPACTED OVER THE FULL WIDTH OF THE TRENCH, COLD MILLED, AND RESURFACED.
3. IT IS ASSUMED THAT THE EXISTING ROADWAY SURFACES CAN BE REPAIRED AS SHOWN IN THE DETAILS HEREON. A FULL DEPTH REPAIR IN LIEU OF MILL AND REPAVE, MAY BE REQUIRED AND WILL BE ALLOWED BY THE COUNTY. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THIS DETERMINATION PRIOR TO BIDDING. IF CONTRACTOR ELECTS TO PERFORM A FULL DEPTH REPLACEMENT, THE EXISTING AB SHALL BE COMPACTED TO A MINIMUM OF 95% PER CAL 216/231. 1 2



2 VAR ALL TYPES AND SIZES OF PIPE IN PAVED ROADWAY IN COUNTY ROW
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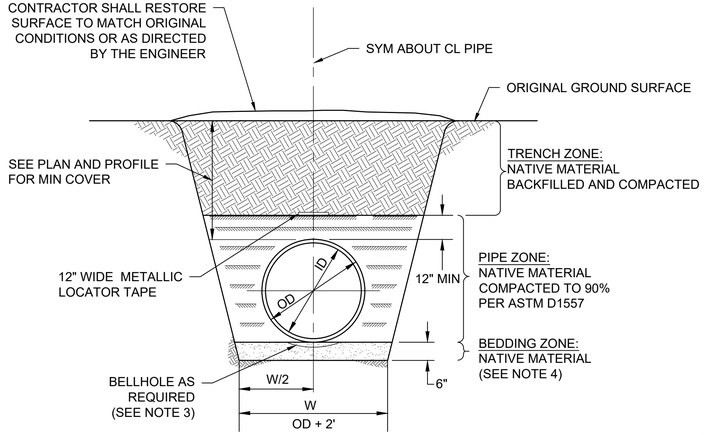

4 VAR PVC DISTRIBUTION LATERAL PIPING IN FARMERS AREAS
NOT TO SCALE

GENERAL NOTES:

1. ALL EARTHWORK SHALL BE IN ACCORDANCE WITH SECTION E - EARTHWORK AND SITEWORK OF THE SPECIFICATIONS.
2. TRENCH BOTTOM OR BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES AND RESTRAINED JOINTS.
3. BELLHOLES FOR PIPE SHALL HAVE A CLEARANCE OF 3" BETWEEN THE BOTTOM OF THE BELLHOLE AND THE EXTERIOR OF THE PIPE BELL, BUT IN NO CASE SHALL BELLHOLES BE SMALLER THAN REQUIRED TO FACILITATE PLACING OF THE PIPE OR PROPER JOINING OF THE PIPE. WHERE THE BELL AND SPIGOT JOINS ARE RESTRAINED THE 3" CLEARANCE SHALL BE FROM THE TIE-ROD RESTRAINERS AND HORIZONTAL LENGTH SHALL BE AS REQUIRED TO FACILITATE INSTALLATION.
4. COMPACTED BACKFILL SHALL BE COMPACTED TO A DEGREE AT LEAST EQUIVALENT TO THE EXISTING DEGREE OF COMPACTING OF ADJACENT IN-PLACE EARTH MATERIALS AGAINST WHICH SUCH COMPACTED BACKFILL IS TO BE PLACED, OR TO A MINIMUM OF 90% PER ASTM 1557, WHICHEVER IS GREATER. FOR DEFINITION OF COMPACTED BACKFILL AND OF MAXIMUM DENSITY, SEE SPECIFICATIONS. 1
5. MINIMUM 3-INCH DEEP LAYER OF SCARIFIED MATERIAL WHEN IN HARD MATERIAL. IN UNSUITABLE MATERIAL, OVEREXCAVATE AS DIRECTED BY THE ENGINEER (6" MIN.) AND REPLACE WITH COMPACTED BACKFILL.
6. W = PIPE O.D. + 24" MIN.
7. ALL TRENCH SECTIONS SHALL COMPLY WITH CAL-OSHA REQUIREMENTS.
8. ALL SHORING SHALL BE DESIGNATED BY A CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.
9. CONTRACTOR SHALL MAINTAIN MINIMUM 3-FEET OF UNDISTURBED EARTH BETWEEN EDGE OF TRENCH AND THE EDGE OF ALL UTILITY POLES.
10. ALL UNDERGROUND UTILITIES AND ABOVE GROUND UTILITIES SHALL BE PROTECTED IN PLACE. IF THE CONTRACTOR FINDS CONFLICT BETWEEN CONTRACT FACILITIES AND EXISTING FEATURES, HE SHALL NOTIFY THE ENGINEER IMMEDIATELY AND FOLLOW NOTIFICATION UP IN WRITING WITHIN 24 HOURS.
11. BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES.

ISSUE FOR BID

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

REGISTERED PROFESSIONAL ENGINEER SAMUEL W. SCHAEFER C 66337 Exp. 6-30-26 STATE OF CALIFORNIA

Designed:	S. SHAEFER
Drawn:	K. TRAN & L. FLORES
Checked:	M. MARTIN
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DRIVER ROAD PIPELINE

DELANO CA 93215
KERN COUNTY

NO	DATE	ISSUE/REVISION	APP
2	2/24/2025	ADDENDUM 2	
1	2/12/2025	ADDENDUM 1	
0	1/27/2025	FOR BIDDING	

SHEET NAME
TYPICAL TRENCHING DETAILS

SHEET NO.
CG-01

DWG. NO.
16 OF 21