



**SEWER FORCE MAIN REPLACEMENT PROJECT
FOR
COUNTY SERVICE AREA (CSA) 70 – S3 – LYTLE CREEK**

WARNING:

ALL INDIVIDUALS INTERESTED IN BIDDING ON THIS PROJECT MUST OBTAIN THE FINAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT MANAGING THE PROJECT OR AS OTHERWISE STATED IN THE ADVERTISEMENT FOR BIDS FOR THE PROJECT. DO NOT USE THE PLANS AND SPECIFICATIONS POSTED ON THE CLERK OF THE BOARD'S WEBSITE FOR BIDDING THE PROJECT.

**SECTION 02201
CONSTRUCTION METHODS & EARTHWORK**

PART 1 - GENERAL

1.1 REQUIREMENT

A. Verification of Existing Conditions

It shall be the responsibility of the Contractor to examine the site of the work and to make all investigation necessary, both surface and sub-surface, to determine the character of materials to be encountered and all other existing conditions affecting the work.

B. Compliance with Regulations

The Contractor shall familiarize himself, and comply with all applicable federal, state, county and municipal rules and regulations pertaining to sanitation, fire protection, and safety.

C. Contractor's Equipment

The Contractor shall provide such modern plant and equipment as may be necessary in the opinion of the Engineer to perform in a satisfactory and acceptable manner, and in accordance with the specifications, all the work required of the Contractor.

D. Representatives for Emergencies

The Contractor shall file with the District a written list giving the names, addresses, and telephone numbers of at least two (2) of his representatives who can be contacted at any time in case of emergency. The representatives shall be fully authorized and equipped to correct unsafe or inconvenient conditions on short notice. The Contractor shall promptly notify the District of all changes in the listing.

E. Power and Water Supply

The Contractor shall provide at his own expense all necessary power required for his operations under the contract. The Contractor shall provide and maintain in good order such modern power equipment as shall be adequate in the opinion of the Engineer to perform in a safe and satisfactory manner the work required by the contract.

The Contractor may obtain water for work under this specification from the sources as stated in the Special Provisions and Requirements of this specification.

1.2 STRUCTURE PROTECTION

A. Contract Drawings

The drawings identify the various pipes, conduits, and other existing utility structures as they are supposed to exist in construction areas, but no error or omission on said drawings shall be construed to relieve the Contractor from the responsibility of protecting any such pipe, conduit, or other existing utility structures.

When deemed necessary by the Engineer, revisions of the contract drawings and additional detailed drawings will be issued to the Contractor during the progress of the work.

B. Notification of Underground Service Alert of Southern California

When performing underground work, the Contractor shall call Underground Service Alert (USA), the one-call underground facility locating service two (2) working days prior to making an excavation. Contractor shall be responsible for such notification of sub-contractor's work, or shall require sub-contractor to assume this responsibility.

C. Operation of Utilities

No District valves or other maintenances of other utility facilities shall be operated by the Contractor without approval and/or instruction from the District or the utility, as appropriate.

D. Maintenance of Utilities

Insofar as practical during the progress of the work, the property of any owner of a public utility pipeline or conduit, sewer, culvert, storm drain, drainage ditch, flood control channel, overhead wires or cables, or underground wires or cables, or any other structure or facility shall not be disturbed but shall be supported and protected against injury and maintained in good operating condition at the expense of the Contractor. In no case shall any such property be disturbed or removed without the consent of the owner and approval of the Engineer. The Contractor shall be responsible for making good all damage due to his operations and the provisions of this section shall not be abated even in the event such damage occurs after backfilling, or is not discovered until after completion of backfilling.

The Contractor shall explore the location and depth of underground facilities, sewers, and storm drains sufficiently in advance of pipe laying or other construction operations so that changes in line or grade, or both, can be made in the pipeline without delay of the Contractor's construction schedule, without relaying or reconstructing previously installed pipe or other facilities and to avoid wherever possible moving, altering, or reconstruction of the obstructing underground facilities, sewers, or storm drains.

The locations of existing underground utilities and structures, insofar as they are known from information furnished by the respective utility companies and agencies and other sources, have been shown on the drawings.

It shall be the responsibility of the Contractor to verify the location of these obstructions and to locate any other underground utilities and structures which might necessitate a change in the line and grade of the new work. If the Contractor, while performing the work of construction, discovers utility facilities not identified by the District in contract plans or specifications, he shall immediately notify the District in writing.

In no case shall any utility that has been damaged, whether shown or not shown on the plans, be backfilled without the Contractor notifying the utility company of the damage.

E. Utility Construction

If the work requires, as shown on the drawings or as specified, or as required for the Contractor's convenience, that the surface and overhead facilities, underground facilities, sewers and storm drains should be moved, altered, relocated, reconstructed, or temporarily supported, in order that the facilities included in the contract can be constructed, the Contractor shall make all arrangements therefore with the respective owners and shall bear all expenses for moving, altering, relocating, or temporarily supporting the facilities.

In addition, the District may require the moving, altering, or reconstructing of obstructing underground facilities, sewers, or storm drains, and compensation therefore will come under extra work where such work is ordered in writing by the Engineer.

Pipelines determined to be abandoned may be destroyed if conflicting with the contract work and properly disposed of. Exposed ends of abandoned pipelines shall be plugged for watertightness as approved by the Engineer.

1.3 JOB CONDITIONS

A. Rights-of-Way

The District will provide right-of-way for the pipelines to be constructed under the contract. Neither the terms hereof nor anything shown on the drawings in connection with the right-of-way provided by the District shall be construed to entitle the Contractor to conduct operations in said right-of-way in violation of any public agency ordinance or regulation restricting interference with water courses and drainage channels, road, alley, or street, until he has obtained permits therefore from the proper authorities.

In all of the streets in which the work may interfere with ingress or egress of the occupants of the abutting property or of their vehicles, the Contractor shall maintain temporary practical means of ingress and egress or shall make satisfactory arrangements with the occupants for the obstructing of ways to their properties for the duration of the interference. Such arrangements shall be made in writing and a copy submitted to the Engineer.

Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street or way during performance of the contract work, and he shall so conduct his operations as not to interfere unnecessarily with the authorized work of other agencies in such streets and ways.

Fences on the right-of-way shall be removed by the Contractor where necessary for the performance of the work, but, where required, shall be maintained until the work is completed or their removal is authorized. Where the Contractor removes existing fences to facilitate the work, temporary fence protection for lands adjacent to the right-of-way shall be provided at all times during the continuation of the contract. Such temporary fence protection shall be adequate to prevent livestock from straying from or onto adjacent lands and shall be constructed complete with gates and/or cattle guards. The cost of all work described in this paragraph shall be included in the prices bid for other items of work and no separate payment shall be made therefore. Where pipelines are to be constructed through and adjacent to tracts of improved property, the Contractor shall, where practical, confine his operations within a 30-foot wide right-of-way or such other width right-of-way as may be designated on the drawings or in the Special Provisions. If the Contractor's operations are such as to require additional space, the Contractor shall arrange for and secure at his own expense any additional right-of-way required. The Contractor shall enter into written agreements with the landowners and copies of the agreements shall be furnished to the Engineer.

B. Safeguarding Excavations and Property

Excavations shall be adequately shored and braced so that the earth will not slide or settle and so that all existing improvements of any kind will be fully protected from damage. Any damage resulting from a lack of adequate shoring and bracing shall be the responsibility of the Contractor. The Contractor shall effect all necessary repairs or reconstructions at the Contractor's own expense as directed by the Engineer and shall bear all other expenses resulting from such damage.

C. Safety Measures

Each bid proposal submitted under these specifications for the construction of a pipeline, sewer, sewage disposal system, boring and drilling pits, or similar trenches or open excavations, or the use of such a trench or open excavation, shall include in appropriate bid items for such work the costs necessary to provide adequate sheeting, shoring, and bracing, or equivalent method for the protection of life or limb, which shall conform to applicable safety orders, including the Construction Safety Orders of the California Division of Occupational Safety and Health, in accordance with the requirements of the California Occupational Safety and Health Act.

When working in, or connecting to, existing systems in operation, the required safety provisions for work in an operating system will be enforced, including provisions for working in confined air spaces when appropriate.

Nothing in this requirement shall be construed to impose tort liability on the awarding body or any of its employees.

D. Trench Shoring Approval

Any contract for public works involving an estimated expenditure in excess of twenty-five thousand dollars (\$25,000) for the excavation of any trench or trenches 5' or more in depth, shall require submission by the Contractor and acceptance by the awarding body or by a registered civil or structural engineer to whom authority to accept has been delegated, in advance of excavation, of a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

Nothing in this section shall be deemed to allow the use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders.

Nothing in this section shall be construed to impose tort liability on the awarding body or any of its employees.

E. Trench Permit

Prior to commencing any work in the construction or use of trenches or excavations which are 5' or deeper and into which a person will be required to descend, the Contractor shall apply to the California Division of Occupational Safety and Health, and secure a permit therefore, and shall furnish the District with a copy thereof prior to commencing any excavation.

F. Safety Officer

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of hazards and accidents. This person shall be the Contractor's Superintendent unless otherwise designated in writing by the Contractor to the District.

G. Right to Occupy Completed Portions of Work

The District may wish to occupy or place in service portions of the completed work before final completion of the contract work and shall be at liberty to do so, but such occupancy or placing in service of any completed portion of the work shall not void the contract nor relieve the Contractor of his responsibility of protection and care of all work until final completion and acceptance of the entire work, provided, however, that expense directly attributable to operation and placing in service the portions of the work shall not be chargeable to the Contractor.

1.4 GUARANTEE

The Contractor hereby guarantees that the entire work constructed by him under the contract will fully meet all the requirements thereof as to quality of workmanship, and of materials furnished by him. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defective materials or workmanship supplied by him which have become evident within one (1) year, or other guarantee period elsewhere specified, after date of notice of completion and acceptance of the work is filed, and to restore to full compliance with the requirements of these specifications including the test requirements, any part of the facilities or appurtenant works which during said guarantee period is found to be deficient with respect to any provision of this specification. Replacement of backfill where it has settled below the lines established by the Engineer shall be considered part of such repair work. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Engineer. If the Contractor fails to make the repair and replacements promptly, the District may do the work, and the Contractor and his surety shall be liable to the District for the cost thereof.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Select Backfill Material, and Special Bedding and Backfill

Select backfill material shall be selected from the excavated material or imported when not available from the excavated material. In either case, it shall be provided at the Contractor's expense, and shall be included in the costs proposed for pipeline installation on the bidding sheets.

Where called for on the plans or in these specifications, and not covered by a separate bid item, special bedding or backfill shall be included in pipeline construction costs on the bidding sheets.

Where required by the governing agency or by the District to meet compaction requirements of these specifications or requirements of these specifications for bedding or for select granular backfill, special bedding or imported backfill and disposal of excavated spoil shall be provided at the Contractor's expense.

The requirements for special bedding and backfill at the Contractor's expense as described herein as a part of the Special Conditions or as shown on the Contract Drawings shall supersede and take precedence over any and all other requirements for measurement and/or payment for special bedding or backfill found elsewhere in these specifications. Bedding is defined herein to include sand, rock or concrete base, cradle, or encasement. Backfill material is defined herein to include backfill for trench backfill and pipe bedding (or pipe zone backfill).

Special bedding or backfill not called for on the plans or in these specifications, but required by the Engineer over and above the requirements of this specification shall be constructed at additional cost, at prices reflecting current material costs as evidenced by paid vouchers, plus 50% to cover all costs of installation and overhead.

The encounter of ground water not anticipated in engineering reports made available for this contract, and the required over-excavation and construction of a stable base as determined necessary by the Engineer shall be considered over and above the requirements of this specification, and the required base shall be paid for at the above stipulated prices.

PART 3 – EXECUTION

3.1 WEATHER LIMITATIONS

Excavating and grading shall be performed only when the weather conditions do not adversely affect the quality of the finished product. Any graded or excavated areas that are damaged by the effect of rain, or other weather conditions, during any phase of the construction, shall be re-excavated, regraded, and recompacted to conform to the herein specified requirements, without additional cost to the District.

3.2 PREPARATION

A. Dust Abatement

The Contractor shall furnish all labor, equipment and means required and shall carry out protective measures wherever and as often as necessary in the opinion of the Engineer to prevent his operations from producing dust in amounts damaging to property or causing nuisance. The Contractor shall be responsible for any damage resulting from dust originating from his operations. **The Contractor shall also make himself knowledgeable of Southern California Air Quality Management District's Rule 403-Fugitive Dust and comply with these requirements.** The dust abatement measures shall be continued until all required resurfacing is completed or until the Contractor has completed arrangements with the proper authorities whereby he is relieved of further responsibility. Such arrangements shall be approved by the Engineer prior to their completion. All compensation to be received for dust abatement shall be included in the prices named for appropriate items of the bidding sheet.

B. Utilities and Substructures

The indication of the type and approximate location of existing utilities and substructures in the Contract Documents represents a diligent search of known records, but the accuracy and completeness of such indications are not warranted by the District and utility structures and services not so indicated may exist. Before commencing any excavations, the Contractor shall investigate, determine the actual locations, and protect the indicated utilities and structures, shall determine the existence, position, and ownership of other utilities and substructures in the site or where the work is to be performed by communication with such owners, search of records, or otherwise, and shall protect all such utilities and substructures.

C. Control of Water

The Contractor shall acquire such permits and take such measures as may be required, and shall furnish, install, and operate such pumps or other devices as may be necessary to remove any seepage, storm water, or sewage that may be found or may accumulate in the excavations during the progress of the work. The Contractor shall keep all excavations entirely free from water at all times during the construction of the work and until the Engineer gives permission to cease pumping. He shall keep the complete work reasonably free from accumulations of water and sewage, and shall free it entirely at such times as may be required by the Engineer for inspection or other purposes. Any accumulated water or sewage thus pumped shall be disposed of in accordance with good practice and local ordinances.

The Contractor shall provide an adequate dewatering system for the control of surface and groundwater seepage into the excavations as may be required during the construction period. The proposed plan of this dewatering system shall be submitted to the Engineer for concept approval prior to the installation of the system.

3.3 CONSTRUCTION

A. Excavation

The Contractor shall perform all excavation necessary or required for the construction of the facilities covered by these specifications. Excavations may be performed by either hand or machine methods and shall be of sufficient size to provide adequate space for working in accordance with safety regulations and practice and the Contract Drawings. Excavations shall include the removal and disposal of all materials of whatever nature and quantity including water, rock, decomposed granite, or any other type of soil or material, subsurface obstructions and also overhead obstructions which may interfere with the operation of equipment used on the work, for no additional compensation. Excavation shall immediately precede subsequent construction, and shall not remain open longer than necessary for construction. Excavation for foundations shall be made only after construction of subgrade, as hereinafter described, has been completed. Over-excavation for foundations shall be filled with concrete.

1. Seismic Investigation. In suspected or known fault areas, Contractor shall make his trench or excavation available to the property owner or his geologist for seismic investigations as required under the Alquist-Priolo Geologic Hazard Zones Act. Such investigation shall involve no delay to the Contractor.
2. Trench Excavation. Unless otherwise specified in the Special Conditions or on the Contract Drawings, pipeline trenches and clearances shall be per Special Districts Standard Drawings for Sanitary Sewers for sewer pipe installations. The sides of the trench shall be parallel to and at equal distance on each side of the centerline of the pipe.

The maximum length of trench which shall be opened or partially opened at any one time shall be limited to 500' for sewer lines and one-half mile for water pipelines, except where governed by other agencies or approved by the Engineer. See Section 3.04. "Clean-up During Construction" for maximum trench length without re-trenching. Bell holes or depressions shall be dug by hand at the proper locations of sufficient size to adequately work the joints, but no larger than is required.

When the trench is excavated to the line and grade as shown on the drawings, and the bedding material encountered is rock, the trench shall be excavated an additional depth of at least 4" below the grade for the bottom of the pipe, and the bottom of the trench shall be refilled with approved material, moistened and compacted by tamping or by other approved method to the satisfaction of the Engineer.

Where ground water is encountered and the native material does not afford a solid foundation for pipe subgrade as specified above, the Contractor shall excavate to such depth below subgrade as determined necessary by the Engineer and shall construct a stable base by placing crushed rock bedding upon which subgrade can be prepared. Crushed rock for bedding shall be one and one-half inch (1 1/2") maximum size.

When the trench has been inadvertently excavated below the designed grade, at the Contractor's expense, the bottom of the trench shall be refilled with approved material, well compacted into place in an approved manner and to the satisfaction of the Engineer.

3. Excavated Materials. Shall be piled neatly along the side of the trench and adjacent to manhole excavations in such a manner as to be of as little inconvenience as possible to the public traffic or the occupants of the adjacent property, and be in compliance with safety standards and soils report recommendations.
4. Manhole Excavations. Shall be made to the depths as indicated on the drawings, with sufficient side clearances to provide adequate working space for the construction of the manhole structure.

When unsatisfactory soil bearing conditions, such as soft mud, quicksand, or other unstable materials are encountered at the elevation of the bottom of the manhole, the base shall be made firm and solid by removing said unstable material to sufficient depth and replacing same with crushed rock, gravel, or other approved material, well compacted into place in a manner approved by the Engineer.

5. Cutting. In cutting or breaking up street surfacing, the Contractor shall use equipment acceptable to the authorities concerned. The pavement to remain in place shall be trimmed with an approved cutting device in such manner as to leave a vertical face with sound, unfractured pavement. All pieces of pavement resulting from cutting or breaking up street surfacing shall be removed from the trench area prior to trenching.
6. Disposal of Excavated Materials. Insofar as space is available in the right-of-way, such space may be used for temporary storage of excavated material, to be used for backfill, provided that no material shall be stored or deposited in violation of any ordinance or regulation prohibiting the filling or obstructing of water courses in drainage channels. Storage of excavated material in any street or highway shall conform to the regulations of the public authority having jurisdiction there over. All materials removed from the excavations in excess of that stored temporarily as above specified shall be immediately hauled away and used in backfilling elsewhere, or, if not used, shall be disposed of by the Contractor. The disposal area shall be acquired by the Contractor. No materials shall be disposed of either temporarily or permanently on privately or publicly owned property unless the Contractor shall first obtain permission therefore from the owner or agency concerned. The Contractor shall furnish satisfactory evidence to the Engineer that such consent has been obtained and shall be responsible for all damages and claims that may arise in connection therewith.
7. Bracing and Shoring. The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the side of the excavations for the proper protection of workmen, to facilitate the work and prevent damage to the pipes and manholes being constructed, and to prevent damage to adjacent structures or facilities. Upon completion of the work, all bracing and shoring shall be removed unless otherwise directed or permitted by the Engineer. Site conditions that alter shoring submittals such as blasting, groundwater, differing soils, etc., must be reviewed for adequate shoring by Contractor or his Engineer.

B. Installation

1. Pipe. The pipe manufacturer shall send a field representative to answer any questions on installation procedures, within 48 hours of request, as coordinated by and through the Engineer.
2. Concrete Encasement. Where required on the Contract Drawings, concrete cradles and encasements shall be constructed in accordance with the requirements stated thereon.

Whenever the maximum allowable width of trench as specified elsewhere in these specifications or in the construction plans or the standard drawings, is exceeded for any reason except as provided for in the plans or special conditions or by the written direction of the Engineer, and where the resulting effect of the exceeded trench width would place loads upon the pipeline exceeding the maximum loads recommended by the pipe manufacturer, the Engineer may require, at his discretion, that the Contractor, at his own expense for all labor and materials cradle the pipe in Class "C" concrete, as described in this specification.

C. Fill, Backfill and Grading

Fill, Backfill and Grading shall include all scarifying, moistening, compaction, and other manipulations of the soil necessary to obtain the required densities, cross sections, lines, grades and surface finish indicated or specified. Backfill shall not be placed in trenches or excavations until the pipelines and structures in the particular section involved have been inspected and approved for backfilling by the Engineer.

Backfill shall be placed, insofar as practical, as the work progresses, allowing time for concrete (if used) to attain sufficient strength.

All excavations outside the completed pipelines and structures shall be backfilled with compacted material to the level of the original ground surface unless otherwise shown on the drawings or ordered by the Engineer. The materials used for backfill shall be imported, selected material, or approved selected excavated materials and shall be placed as directed by the Engineer. All materials placed within 6" of the pipe or structure shall be free from rocks or boulders larger than 1 1/2" maximum dimension, and from unbroken masses of earthy materials which might lodge and thereby cause unfilled pockets in the excavation.

Unsuitable material encountered at the surface upon which the bedding material is to be placed shall be removed to a depth as determined in the field by the Engineer. Unsuitable material shall be as determined by the Engineer. If not otherwise specified, removal of material and additional bedding so ordered over and above the amount required will be paid for in accordance with the specifications unless, however, the necessity for such additional bedding materials has been occasioned by an act or failure to act on the part of the Contractor, in which event the Contractor shall bear the expense of the additional excavation and backfill to the required depth. The Contractor's attention is called "dewatering" procedures to ensure that an otherwise stable foundation will not be rendered unfit due to accumulation of water in the trench excavation. However, the Contractor has the responsibility to reasonably ascertain the soil conditions prior to bid. The cost of removing the unsuitable materials should have been known prior to bid and be included in the bid price.

Imported materials (if any) required for fill or backfill shall be provided by the Contractor from areas outside the site at his own expense. Such material shall be as herein specified and must be approved by the District before delivery to the site.

1. Structure Backfill. The Contractor shall place all backfill about structures to the original ground level, or to the lines shown on the drawings or prescribed by the Engineer. Fill materials shall be of earth only, and be free from debris, vegetation, alkali, or other deleterious substances.

All backfill about structures shall be placed in layers not more than 6" thick prior to compaction, which shall be obtained by moistening to optimum moisture content prior to placing and compacting to maximum compaction by use of suitable equipment approved by the Engineer.

The Contractor shall take all necessary precautions to protect the structure and underground facilities during the placement, compacting or consolidating, and grading of backfill.