

SECTION 03760 – MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

- A. The Work of this section includes the rehabilitation of existing sewer manholes at the direction of the AGENCY and where indicated on the Plans. The Contractor shall coordinate his work so as to minimize the interference with the existing sanitary sewer service. Rehabilitation shall consist of replacement of the existing manhole cone, chimney, grade rings, frame and cover, preparing the interior surface of each manhole, application of repair mortar where needed to restore damaged surfaces, application of epoxy primer and polyurethane lining, and all incidentals necessary to complete the work contained in these technical provisions in accordance with the Water, Sewer, and Recycled Water Design and Construction Manual (Oceanside Water Utilities Manual) Standard Drawings, and SSPWC Section 500-2.4.
- B. The Contractor shall furnish all traffic control, sewer bypassing, labor, materials, tools, and equipment necessary to complete all work in accordance with these Contract Documents and at the direction of the AGENCY.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01300 – Record Drawings and Submittals
- B. Section 02960 – Temporary Sewer Bypass Pumping
- C. Section 03740 – Concrete Rehabilitation
- D. Section 09800 – Painting and Coating
- E. Section 09801 – Manhole Lining
- F. City of Oceanside Water, Sewer, and Recycled Water Design and Construction Manual (Water Utilities Manual)

1.3 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with the standard specifications.
- B. The CONTRACTOR shall submit technical data for materials which document compliance with the requirements of this section.
- C. The Contractor shall provide written installation recommendations from the manufacturer for each of the products to be used in the manhole rehabilitation work.

1.4 QUALITY ASSURANCE

- A. Packaging: The Contractor shall store all products to be used in their original packaging. The packaging shall indicate the manufacturer and product contained.

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- B. All products to be used in the work shall be delivered, stored, and handled in accordance with the product manufacturer's written recommendations.
- C. Manufacturer and applicator both shall demonstrate a minimum of five (5) years of experience and five (5) successfully completed projects of similar magnitude and nature as this project. Experience and project references shall include project name, project number where applicable, agency or owner, contact name, phone number, and project description.

PART 2 – MATERIALS

2.1 MANHOLE PROTECTIVE LINING

- A. Mortar repair materials used for existing manholes to be rehabilitated shall be in accordance with the standard specifications.
- B. The lining material shall be in accordance with the standard specifications.

2.2 LADDER RUNGS

- A. The CONTRACTOR shall remove all existing ladder rungs inside the manholes to be rehabilitated. The CONTRACTOR shall core drill to remove the existing ladder rungs, anchors, and hardware to a depth of half of the thickness of the manhole wall. The void that remains after removal of the ladder rung shall be repaired using methods and materials in accordance with the standard specifications. The CONTRACTOR may recommend an alternative procedure to remove the existing ladder rungs, anchors, and hardware if so desired, but shall submit the alternative plan and procedure to the AGENCY for approval indicating that the alternative plan will satisfy the requirements described herein.

2.3 MANHOLE CONES, CHIMNEY, FRAME AND COVER

- A. The CONTRACTOR shall remove and replace existing manhole, cones, chimney, grade rings, frames and covers for all manholes to be rehabilitated in accordance with the standard specifications
- B. Frame and cover shall be cast iron in conformance the Oceanside Water Utilities Manual and the standard specifications.
- C. CONTRACTOR shall be responsible for excavation, backfill, compaction, and pavement replacement as needed for the replacement of manhole frames and covers to the satisfaction of the AGENCY and in accordance with all jurisdictional standards.

2.4 MANHOLE SHELF

- A. Where determined necessary by the AGENCY, the CONTRACTOR shall rebuild the existing manhole shelf to original dimensions using concrete repair materials as specified in the standard specifications.

2.5 MANHOLE CHANNEL

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- A. Where determined necessary by the AGENCY, the CONTRACTOR shall rebuild the existing manhole channel to original dimensions using concrete repair materials as specified in the standard specifications. Where channel areas require rehabilitation, the CONTRACTOR shall install a temporary flow sewer plug so that repair materials are installed over a dry substrate and are allowed to cure in accordance with manufacturer's written recommendations before coming in contact with sewage. Temporary bypassing shall meet the requirements set for the in Part 3 of this Section.

2.6 LEAK REPAIR

- A. After surface preparation and prior to concrete repair, the CONTRACTOR shall stop all leaks in the existing manhole by the injection of chemical grout as determined necessary by the AGENCY. Chemical grout used shall be compatible with all other materials used in the rehabilitation process.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. All concrete surfaces to be lined shall be water blasted to remove all deteriorated concrete, oil, grease or existing coating to produce a good grade of firm, clean concrete or brick.
- B. Water blasting equipment shall be a minimum pressure of 6,000 psi and shall not include detergent or other chemical cleaning solvents in the process.
- C. All debris produced from the water-blasting operations shall be removed from the structure prior to coating. No debris shall be allowed to enter the sewer system. The concrete surface shall be allowed to dry prior to application of the prime coating. The Contractor shall ventilate manhole to obtain a dry surface (dry to the touch).
- D. The Contractor shall remove all types of ladder rungs from the manhole.
- E. Following surface preparation of existing manholes to be rehabilitated, the Contractor shall apply mortar in continuous lifts between 1-3 inches in thickness to restore dimensions of existing manhole. Proper containment devices shall be used to prevent rebound (non-adhering excess mortar) from entering the sewer system.
- F. AGENCY shall inspect the manholes to determine if any additional mortar coating should be provided to cover severely exposed aggregate.
- G. Immediately following the mortar placement operations, the containment device shall be removed and the manhole cover reinstalled to provide a moist curing environment. Where moist conditions do not exist, the Contractor shall provide a water cure to the mortar.

3.2 WATER TIGHTNESS

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- A. The end cuts of the liner inside the manhole shall be fully sealed to prevent water entering into the space between the host pipe and the liner.

3.3 PRIME COATING

- A. See the standard specifications for Prime Coating information.

3.4 LINING APPLICATION

- A. See the standard specifications for Lining Application.

3.5 TEMPORARY FLOW THROUGH PLUG OR BYPASS SYSTEM

- A. The Contractor shall be provide, install, maintain, and remove all temporary flow bypassing equipment and materials needed to complete the manhole rehabilitation work. The Contractor shall be responsible for selection of all means and methods to bypass flows as necessary to perform the work. The Contractor shall also install a temporary rack at the manhole directly downstream of the manhole that the temporary bypass equipment is being used to prohibit the passage of any loose or unanchored equipment from entering the downstream sewer system.
- B. See the standard specifications for requirements of the sewer bypassing plan.

**** END OF SECTION ****