CITY OF ALBANY, OREGON

RIVERFRONT INTERCEPTOR
CIPP REHABILITATION

SPECIFICATIONS

MARCH 2020

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RIVERFRONT INTERCEPTOR
CIPP REHABILITATION

SEAL PAGE

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CITY OF ALBANY

RIVERFRONT INTERCEPTOR CIPP REHABILITATION
PROJECT NO. 519-14-18-18

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SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General description of the Project and the Work to be performed by the Contractor.

1.02 WORK COVERED BY CONTRACT

A. The Work covered under this Contract will be performed along public right of ways and within private properties located within the City of Albany. The project location is indicated on the Drawings.

B. Construction shall be in conformance with the current edition of the City of Albany Standard Construction Specifications, the Construction Drawings, and the Specification. Each bidder may access a current set of City of Albany Standard Construction Specifications on the City of Albany's website at https://www.cityofalbany.net/departments/public-works/engineering/standard-construction-specifications or a printed set may be purchased from the City. All public improvements are required to conform to these specifications and bid prices shall reflect these specifications.

C. The Work to be performed by the Contractor generally includes:

1. Furnishing all labor, superintendence, materials, power, water, tools, equipment and services required by the Contract Documents or required to complete the Work.

2. Coordinate work of all subcontractors and trades.

3. Furnishing and installing miscellaneous items incidental to or necessary for completion of the Work, whether these items are specifically indicated in the Contract Documents or not.

D. The Work consists of construction of the following items:

1. Base Bid: (Schedule A)

a. The base bid consists of a combination of sectional (spot) repair and full length repair using CIPP as follows: Full-length rehabilitation of approximately 3,528 linear feet of 30-inch through 42-inch diameter sanitary sewer by CIPP, Sectional (Spot) Rehabilitation of 30-inch and 36-inch diameter sanitary sewer by CIPP (approximately 84 linear feet), Manhole Rehabilitation by epoxy coating, Manhole Abandonment, reconnection and Chemically Grouting of Sewer Laterals, Sewer Flow Control, Cleaning and Televising 30" to 42" diameter sanitary sewer, mobilization and demobilization, traffic control, erosion control, and all other incidental items necessary for completion of the Work.

2. Bid Alternate: (Schedule B)

a. The bid alternate consists of full-length CIPP repair for all pipes in the base bid (including those proposed for spot repair in the base bid) as follows: Full-length rehabilitation of approximately 6,570 linear feet of 21-inch through 42-inch diameter sanitary sewer by CIPP, Manhole Rehabilitation by epoxy coating, Manhole Abandonment, reconnection and Chemically Grouting of Sewer Laterals, Sewer Flow Control, Cleaning and Televising 21" to 42" diameter sanitary sewer, mobilization and demobilization, traffic control, erosion control, and all other incidental items necessary for completion of the Work.

E. Preconstruction videos of the sewer segments will be available on the City of Albany's website. Contractors are expected to closely inspect the preconstruction videos, various sites, and warrants, as a result of examination and site visit, the work can be performed in a good workmanlike manner to the satisfaction of the City. Failure to become acquainted with the physical conditions of the project will not relieve the Contractor from the responsibility of properly estimating the difficulty or cost of successfully performing the work.

F. Preconstruction videos of the pipe segments will be available on the City of Albany's webpage under SS-19-05-A at https://www.cityofalbany.net/departments/finance/purchasing/bids-rfps-rfqs.

G. The City makes no warranty regarding the suitability of cured-in-place technology for this project, the Contractor is fully responsible to determine whether conditions are suitable for cured-in-place pipe and to select the people, methods, and equipment required to successfully perform the work.

H. It is the Contractor's responsibility to verify the number, length, and location of all sectional (spot) repairs for the pipes requiring spot repair in the base bid.

1.03 OTHER CONTRACTS

A. Construction may coincide with construction activities by other contractors and agencies. Coordination with the contractors undertaking related work or un-related work within the project work areas is the responsibility of the Contractor.

1.04 SPECIFICATION LANGUAGE

A. Specifications may be written in the imperative mood and streamlined form in accordance with practices and principals of the Construction Specifications Institute.

B. Imperative language is directed to the Contractor unless specifically noted otherwise.

C. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.05 REGULATORY REQUIREMENTS

A. Comply with all Federal, State, and local laws, regulations, codes, and ordinance applicable to the work.

B. Other standards and codes that apply to the work are designated in the Specifications.

1.06 ACCESS BY GOVERNMENT OFFICIALS

A. Authorized representatives of governmental agencies shall have access to the work area at all times. Provide proper facilities for access and inspection.

1.07 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

A. Construction will encounter numerous existing features of various types, such as fences, drain culverts, irrigation facilities, roadside drainage facilities, mailboxes, signs, private and public driveways, curbs, asphalt pavement, buildings, utility poles, guy wires and other surface structures. Protect existing features of this nature and restore features affected by construction operations to their original condition.

B. To the greatest extent possible, remove existing features without damaging the materials and re-use the material to place back in the original condition. When existing features are damaged during removal, install new materials of similar type, appearance and function, at no additional cost to the Owner.

C. Contractor shall be responsible for all damage to streets, roads, driveways, highways, shoulders, ditches, embankments, culverts, bridges, and other public or private property, regardless of location or character, that may be caused by transporting equipment, materials, or workers to or from the work or any part or site thereof, whether by Contractor or Contractor's subcontractors or suppliers.

D. Make satisfactory and acceptable arrangements with the Owner of, or the agency or authority having jurisdiction over, any damaged property concerning its repair, replacement, or payment of costs incurred in connection with the damage.

E. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

1.08 ENTERING AND WORKING WITHIN CONFINED SPACES

A. Contractors working on any public improvement project, while under contract with the City or a private entity, shall comply with the following regulations as they pertain to entering and working within confined spaces (as defined by OR-OSHA):

1. Identify any confined space entry that is required to perform the work and submit a list of the locations to the City.

2. Follow the City's confined space entry procedures or submit an alternate procedure that meets or exceeds OR-OSHA confined space entry regulations.

3. Submit written notice to the City of any hazardous situation that is encountered during the entry of or while working within a confined space.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

SECTION 01140

WORK SEQUENCE AND CONSTRAINTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Schedule requirements, construction constraints, and a suggested Work sequence for specific elements of the Project.

1.02 GENERAL SEQUENCING REQUIREMENTS

A. The sequencing requirements and construction constraints described are critical elements of the Work and are presented to underscore the importance of proper management, planning, scheduling, coordination, and execution of the Work.

B. Sequencing requirements and construction constraints have been defined in this Section for only certain elements of the Work. All work, whether or not addressed in this Section, shall be governed by applicable specified requirements. If additional shutdown constraints are necessary to allow implementation of Contractor's construction procedures and schedule, the Engineer will establish such constraints.

C. Contractor's Construction Schedule:

1. Clearly illustrate the proposed sequence of construction.

2. Conform to the sequencing requirements and limitations specified in this Section where specified.

3. Modify or adapt the suggested sequencing as necessary to complete the project provided all environmental and service continuity requirements are met.

1.03 OPERATIONAL CONTINUITY

A. The City of Albany owns and operates wastewater facilities. The Work under this project will interface with these existing facilities.

B. The existing wastewater collection system continuously receives and conveys wastewater. Do not interrupt functions necessary to maintain operation of these facilities except as approved by the Engineer and as specified herein.

C. Coordinate the Work to minimize interference and interruption of the normal operation of the Owner's existing facilities through proper planning and by making temporary connections.

D. Except for allowable out-of-service periods as specified, maintain operation of sanitary and storm sewers, service laterals, catch basins, manholes, and similar facilities.

1. Provide temporary pumps, piping, power, bulkheads, plugs, and other devices that are required to keep such facilities in operation when these must be temporarily taken out of service in order to conduct the Work.

2. Notify the Engineer in writing 3 days in advance of the time it is necessary to take utilities out of service.

3. Notify public agencies and utility companies when service to customers will be temporarily interrupted to perform the Work and coordinate shutdowns with these agencies.

1.04 NOTIFICATIONS

A. Parts of the Project are in close proximity to railroad tracks owned by BNSF Railway (BNSF) and operated by the Portland & Western Railroad (PNWR). However, these railroad tracks are located within the Water Avenue right-of-way which is under the jurisdiction of the City of Albany. The Contractor shall obtain a no-cost right-of-entry permit from the Portland & Western Railroad for all work that will take place within 25 feet of the railroad tracks. The Contractor shall provide a minimum of four calendar weeks' notice to the PNWR prior to the start of work. Contact PNWR Roadmaster Davin Helms at (503) 816-8010.

B. The Contractor shall provide written notice to the front office of the following agencies, three (3) working days in advance of beginning construction. The written notice shall include the construction schedule and shall explain the extent and duration of expected traffic disruptions.

Agency	Address	Phone Number
U. S. Postal Service	525 2nd Avenue SW Albany, OR 97321	541-926-8829
Albany Transit System	112 10th Avenue SW Albany, OR 97321	541-917-7667
Republic Services	1214 Montgomery Street SE Albany, OR 97321	541-928-2551
Albany Fire Department Administrative Office	611 Lyon Street SE Albany, OR 97321	541-917-7700
Greater Albany Public Schools District Office	718 7th Avenue SW Albany, OR 97321	541-967-4501
Albany Police Department	2600 Pacific Boulevard SW Albany, OR 97322	541-971-7680
Linn County Sherriff's Office	1115 Jackson Street SE Albany, OR 97322	541-967-3950

C. The Contractor shall notify the above-named agencies and the public of any schedule changes that are made by the Contractor, required by the City, or are the result of weather or other unforeseen circumstance. The Contractor shall submit a copy of each notification to the City for review and approval prior to delivering the notices.

D. The Contractor shall provide written notification to all affected residents and businesses three (3) working days in advance of scheduled work that will result in traffic disruptions and blocked access to driveways or parking areas. Written

notifications shall explain the extent and duration of the disruption of traffic and/or blocked access and shall include alternate routes or parking areas as appropriate.

1.05 WORK AROUND UTILITIES

A. Notify the following utilities prior to the start of the work:

Utility	Contact	Telephone	Email
Pacific Power	Tucker Hill	541-967-6161	Tucker.Hill@PacifiCorp.com
NW Natural	Dave Bellinger	541-926-4253 x8238	D6b@nwnatural.com
CenturyLink	Travis Vaughn	503-365-5555	Travis.vaughn@centurylink.com
Comcast	Ryan Hansen	541-230-0079	Ryan_Hansen@comcast.com
LS Networks	Winfried Vogt	503-414-0475	wvogt@LSNetworks.net
AT&T	Thomas Normoyle	503-931-1229	

B. Determine the horizontal and vertical alignment of existing public and private utilities well enough in advance to make adjustments to the Work. Locating utilities ahead of construction and providing protective measures where required are incidental to other bid items.

C. City-owned, underground infrastructure damaged during construction shall be repaired as directed by the Engineer. All completed repair work will require approval of the Engineer prior to covering the work. General repair guidelines are:

1. Existing sanitary sewer mains and service laterals that are damaged shall be replaced with like materials.

1.06 PERMIT VIOLATIONS

A. The wastewater treatment facilities must continuously comply with the Owner's National Pollutant Discharge Elimination System (NPDES) permit.

B. Construction of the Work under this Contract must be undertaken in compliance with the terms and conditions of various permits that the Owner has obtained for this project. Contractor to coordinate with Owner to ensure this requirement is met.

C. In the event NPDES permit violations or spills are caused or, in the Owner's opinion, will be caused by the Contractor's operations, the Owner shall be entitled to immediately employ others to stop the violations or potential spills without giving written notice to the Contractor. All costs incurred by the Owner to stop or prevent permit violations shall be paid by the Contractor.

D. Under no circumstances shall wastewater be discharged, bypassed or spilled to creeks, drainage ditches, or other waterways; storm drain systems; or the ground surface. In the event accidental discharge or bypassing is caused by the Contractor's operations, the Owner shall immediately be entitled to employ others to stop the bypassing without giving written notice to the Contractor. All costs incurred by the Owner to stop or prevent the bypass shall be paid by the Contractor. The Contractor must notify the owner immediately in the event of a spill.

E. Penalties imposed on and costs incurred by the Owner as a result of violations caused by the actions of the Contractor, his employees, or subcontractors, shall be borne in full by the Contractor, including legal fees and other expenses to the Owner resulting directly or indirectly from Contractor's actions.

1. Under the terms of the NPDES permit issued to the Owner, the Owner is liable for violation penalties. Refer to the Owner's NPDES Permit for the violation penalty amounts.

1.07 ACCESS

A. Provide all necessary access to the Owner's personnel as required to safely and efficiently operate/maintain existing facilities.

1.08 WORK AFFECTING PRIVATE PROPERTY

A. It is essential that the Contractor carefully coordinate the work with private landowners who will be affected by the construction.

B. Prior to beginning work that is within public right-of-way, but which will temporarily affect owners of private driveways, mailboxes, and other items of private ownership, notify the property owner of the impending construction and provide a written description of the extent of the work that will affect that property owner, the projected impacts and the schedule for completing the work and removing the temporary impact.

1. Notification may consist of fliers that are hung from door handles and shall identify the Contractor's contact person and phone number.

C. Prior to beginning work in areas that will block access to private driveways and other points of ingress/egress for the general public, prepare an Outage Plan that describes the measures that will be implemented to provide access to private driveways and other points of ingress/egress and how the work will be undertaken to minimize obstructions and inconvenience to private parties and the general public. The Outage Plan shall be submitted to the Engineer for review and work in these areas shall not be started until the Engineer has approved the Outage Plan.

1.09 REMOVING EXISTING FACILITIES FROM SERVICE

A. Existing systems or individual equipment items shall be isolated, decommissioned, de-energized, or depressurized only by the Owner's operations personnel. This work will be done in accordance with the schedule prepared by the Contractor.

B. Design and provide all necessary bulkheads, cofferdams, and support structures to allow isolation of work areas from tanks, pipes, and/or channels that are in service. Bulkheads, cofferdams, and support structures shall conform to applicable OSHA requirements.

C. Provide all necessary temporary pumps, piping, power, electrical wiring, controls, and labor during and subsequent to all shutdown activities as required. Maintain adequate access to the plant facilities, utilities, and equipment during construction to allow continued operation and maintenance by Owner's personnel to take place.

D. Prior to any shutdown or flow diversion, all materials, bypass pumps, fittings, supports, equipment and tools shall be on the site and all necessary skilled labor scheduled prior to starting any connection work.

E. If valves or gates need to be opened or closed, or mechanical equipment turned off or turned on, or similar operations performed to allow construction to proceed, this is to be performed by the Owner's operations staff working in coordination with Contractor personnel. Valves and gates that may be used to isolate lines and facilities may not completely seal. Allow for leakage in planning the Work. Clean the work areas as required to perform the work.

1.10 SCHEDULED INTERRUPTION OF SERVICE

A. Work involving existing sewer lines shall be scheduled in a manner that will minimize disruption of local sewer service. As a general rule, scheduled interruptions of local sewer service shall not occur prior to 8:00 a.m. or after 5:00 p.m. The Contractor shall give written notice to each affected sewer customer a minimum of 48 hours in advance of a scheduled interruption of sewer service. Commercial and industrial sewer customers require a minimum 72-hour advance notice prior to scheduled interruption of sewer service. In addition, a representative of the Contractor shall personally visit each affected business to deliver the notice to the owner or a responsible employee and answer any questions regarding the sewer interruption. The Contractor shall coordinate with affected businesses to make sewer lateral connections to the mainline at times convenient for their normal operation. In some circumstances it may be necessary to schedule sewer interruptions outside of normal working hours. No extra compensation will be due the Contractor for work performed outside of normal working hours.

B. The notice shall contain the name and phone number of the Contractor and a contact person and shall also state the time and date of interruption and estimated length of disruption. The City must approve the notice prior to distribution. The notifications shall be delivered directly to the primary adult resident, business owner/manager, or prominently affixed to the primary entrance of each dwelling or unit. Notification shall not be placed in U. S. mailboxes or mail slots.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 WORK COORDINATION

A. Schedule and coordinate the overall Work and construction operations, including the work of subcontractors and the timely provision of products and supplies.

B. Perform Work in an orderly and logical sequence. Individual specification Sections may identify specific requirements that are related to Work sequence. These types of constraints are not repeated in this Section but shall be followed by the Contractor.

C. Coordinate work near the railroad. Provide for normal, scheduled train operations.

3.02 WORK CONSTRAINTS

A. Work Hours

1. Except as otherwise required for the safety or protection of persons and except as otherwise stated in the Contract Documents, Work may only be performed Monday through Friday during the hours of 7:00 am and 6:00 pm. Contractor will not perform of Work on a Sunday or any legal holiday defined by the City of Albany without written consent from the Owner.

2. If the Contractor desires to perform construction work outside regular working hours, including Saturdays, the Contractor shall request of the Engineer to do so, in writing, a minimum of 72-hours prior to commencing such work. Such work shall be subject to the approval of the Engineer. Prior to the start of such work, the Contractor shall arrange with the Engineer for inspection of the work. Any costs incurred by the City resulting from such work shall be fully paid by the Contractor.

3. Legal holidays are defined as:

   a. New Year's Day on January 1.

   b. Memorial Day on the last Monday in May.

   c. Independence Day on July 4.

   d. Labor Day on the first Monday in September.

   e. Thanksgiving Day on the fourth Thursday in November.

   f. The Friday after Thanksgiving Day in November.

   g. Christmas Day on December 25.

   h. When a holiday falls on Sunday, the following Monday is recognized as the legal holiday. When a holiday falls on a Saturday, the preceding Friday is recognized as the legal holiday.

3.03 SUGGESTED WORK SEQUENCE

A. Due to the nature of the Project, no work sequence is suggested. The Contractor's proposed work sequence shall be coordinated with the requirements of other specification Sections and the Drawings in order to complete the Work in a timely and satisfactory manner.

END OF SECTION

SECTION 01200

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Methods of measurement and payment for specific items of Work under this Contract. Refer also to General Conditions for administrative aspects of payments by the Owner to the Contractor.

1.02 BID COMPONENTS AND PAYMENT

A. The Bid Form is comprised of the following components:

1. Lump Sum Work
2. Unit Price Work

B. Contractor's cost for "Lump Sum Work" shall cover all Work indicated by the Contract Documents with the exception of cash allowances and specific items of work that are to be paid on a Unit Price basis as indicated on the Bid Form. Lump Sum Work will be paid for on a progress payment basis in accordance with the provisions of the General Conditions.

C. "Unit Price Work" is Work indicated on the Drawings or specified. The price of each unit of Work is to be defined by the Bidder in the Unit Price Bid Schedule in the Bid Form and shall include all materials, labor, equipment, and incidentals required to complete each Work Item. When actual Work differs from the basis of the Work Item, costs shall be adjusted on a pro-rata basis or other method suited for the particular condition.

1.03 Description of Bid Item

A. The Bid Amounts for each Bid Item will be used for comparative bid analysis. The Bid amounts will also form the basis of monthly progress payments. Unit prices for any unit price bid items will be the basis for monthly progress payment determinations and for any changes related to that Work item. Bid items are not intended to be exclusive descriptions of work categories and the Contractor shall determine and include in its pricing all materials, labor, and equipment necessary to complete each Bid Item (work phase) as shown and specified

B. <u>Base Bid: (Schedule A)</u>

1. The Base Bid includes payment for all work, equipment, and materials necessary for completion of all Base Bid work in accordance with the drawings and specifications and as defined in Section 01110.
2. Payment will be made as described for each bid item in the Special Provisions and the Schedule of Contract Prices.

C. Bid Alternate: (Schedule B)

1. The Bid Alternate includes payment for all work, equipment, and materials necessary for completion of all Bid Alternate work in accordance with the drawings and specifications and as defined in Section 01110.

2. Payment will be made as described for each bid item in the Special Provisions and the Schedule of Contract Prices.

1.04 PROGRESS PAYMENT REQUESTS

A. Submit Progress Payment Requests during the course of the project in conformance with the General Condition.

B. Submittal of progress record drawings of the project will be required at 50%, and completion of the project. These submittals shall accompany the progress payment request and will be a condition of processing payment requests.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

SECTION 01330

SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for the submittal of information that will enable determination of whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the Contract Documents.

B. Furnish drawings, specifications, descriptive data, certificates, samples, test results, methods, schedules, manufacturer's installation instructions and other information as indicated.

1.02 REFERENCED SECTIONS

A. None

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the materials and equipment incorporated into the Work, or the methods of performing the Work shall be as described in the accepted submittals.

B. Verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment that are being submitted for review. Extraneous materials shall be crossed out or otherwise obliterated.

C. Coordinate submittals among subcontractors and suppliers. Ensure that there is no conflict with other submittals and notify the Engineer in each case where a submittal may affect the work of another contractor or the Owner, including those submittals complying with unit responsibility requirements specified in applicable technical sections.

D. Coordinate submittals with the Work so that work will not be delayed. Coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals.

E. Do not proceed with work related to a submittal until the submittal process is complete and the submittal has received a response "No Exceptions Taken" or "Make Corrections Noted."

F. Certify on each submittal document that the Contractor has reviewed the submittal, verified field conditions, and complied with the contract documents.

1. Include a copy of the specification section with addendum updates, all referenced and applicable sections, and each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.

    a. Use check marks (✓) to denote full compliance with a paragraph as a whole.

    b. If deviations from the specifications are indicated and, therefore requested by the Contractor, underline each deviation and denote by a number in the margin to the right of the identified paragraph.

    c. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications.

    d. Include a detailed, written justification for each deviation.

2. Failure to comply with this paragraph is sufficient cause to reject the entire submittal.

1.04 REVIEW COSTS

A. The Owner's cost for review of submittals for the same proposed materials, equipment or work will be apportioned as follows:

1. The cost of review of the initial submittal and the first revised submittal will be borne by the Owner.

2. The cost to review all additional revised submittals after the first revised submittal will be charged to the Contractor. The cost of review shall include, without limitation, administrative, design and engineering activities directly related to review of submittals.

1.05 SUBMITTAL INDEX

A. Within 30 days of the Notice to proceed, submit a list, by specification section, of all submittals to be submitted.

B. Update and resubmit the submittal index on a monthly basis where additional submittals are identified, or as necessary

1.06 CATEGORIES OF SUBMITTALS

A. General

1. Submittals fall into two general categories;

    a. Submittals for review and comment require action by the Engineer.

    b. Submittals that are primarily for information only do not require Engineer's approval.

B. Submittals for Review and Comment

1. Transmit submittals for review and comment to the Engineer. The Engineer will review the submittal for compliance with the Contract requirements and will provide written comments regarding acceptability.

C. Submittals for Information Only

1. Where specified, furnish submittals to the Engineer for information only. The Engineer may, at the Engineer's option, review and comment on any product data.

2. Incomplete or inadequate product data will be returned to the Contractor for resubmittal.

1.07 TRANSMITTAL PROCEDURE

A. General

1. Transmit submittals regarding material and equipment under cover of a Shop Drawing/Transmittal Form (End of this Section).

2. Use a separate form for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required.

3. Identify submittal documents common to more than one piece of equipment with all the appropriate equipment numbers.

4. Make submittals for various items with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

5. Assign a unique sequential number on the transmittal form accompanying each item submitted.

a. Use the following format for original submittal numbers: "XXX"; where "XXX" is the sequential number assigned by the Contractor.

b. Use the following format for resubmittals: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of submittal 25.

B. Electronic Submittals

1. Electronic submittals are preferred except as otherwise indicated.

2. Prepare electronic submittals and Shop Drawings in electronic (*.pdf) format including half-sized and full-sized drawings, catalog information and other required submittal information.

3. Break down submittals that are larger than 10 megabytes into smaller sections, using logical division points to create sections.

4. Electronically bookmark electronic submittals greater than 30 pages in length by major submittal section to facilitate ease of navigation.

C. Paper copy submittals are an acceptable alternative to electronic submittals if the Contractor demonstrates, to the satisfaction of the Engineer, that electronic submittals presents a hardship.

D. Electrical Submittals:

1. See applicable Electrical Sections for submittal requirements. Reference Part I of Sections found in Divisions 13 & 16 for special submittal requirements related to those disciplines.

E. Deviation from Contract

1. If the Contractor proposes to provide material, equipment, or method of work that deviates from the project manual, so indicate under "Proposed Deviations" on the transmittal form accompanying the submittal copies.

F. Submittal Completeness

1. Submittals that do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

1.08 SUBMITTAL CONTENT

A. Prepare submittals in compliance with individual Specification Sections and as indicated herein.

B. Shop Drawings:

1. Develop project-specific, scaled drawings to fully identify materials and products that will be provided and their relationship to other products that will be furnished and installed.

2. Do not utilize reproductions of the Contract Documents as the basis for the submittal.

3. Identify products, assemblies, equipment and systems.

4. Provide equipment identification numbers or tag numbers, wiring diagrams, and setting diagrams.

5. Identify critical dimensions.

C. Product Data:

1. Provide information necessary to demonstrate conformance with the specified requirements. Include performance curves, specifications, and wiring diagrams.

2. Product data may consist of manufacturer’s standard catalog information and data sheets, marked to indicate the specific products that will be provided.

3. Provide supplemental information as necessary to fully demonstrate how products will be modified from the manufacture’s standard products to meet the specification requirements.

D. Manufacturer's Instructions: Written or published information that establishes the manufacturer's recommendations, guidelines and procedures for handling and installation of products, equipment and assemblies.

E. Samples: Mount, display or package samples in a manner that will facilitate review and establish workmanship and quality of materials.

1.09 SUBMITTAL REQUIREMENTS

A. When the Contract Documents require a submittal, submit the specified information as follows:

1. Submittals for Review and Comment:

a. Electronic Submittal: Submit one electronic (*.pdf) submittal.

b. Paper Copy Submittal: If paper copy submittals are acceptable to the Engineer, submit four (4) copies of all submitted information plus one reproducible original for review unless otherwise specified.

2. Submittals for Information Only:

a. Electronic Submittal: Submit one electronic (*.pdf) submittal.

b. Paper Copy Submittal: If paper copy submittals are acceptable to the Engineer, submit four (4) copies of all submittal information for review, unless otherwise specified.

1.10 REVIEW PROCEDURE

A. General

1. The Engineer will review submittals within the processing time identified in paragraph "Processing Time" and return:

a. Electronic Submittal – a signed submittal response document, in (*.pdf) format.

b. Paper Copy Submittal – Two marked up copies of the submitted copies. The reproducible original will be retained by the Engineer.

B. Submittals for Review and Comment

1. The returned submittal will indicate one of the following actions:

a. "NO EXCEPTIONS TAKEN" – The material, equipment or work method complies with the project manual.

b. "MAKE CORRECTIONS NOTED" – Limited corrections are required.

1) Provide a corrected copy where:

a) The information is to be included in the O&M data.

b) If requested by the Engineer.

c. "AMEND AND RESUBMIT" – The submittal is insufficient or contains incorrect data.

d. "REJECTED – SEE REMARKS" – The material, equipment, or work method does not comply with the project manual. Submittals with deviations that have not been identified clearly may be rejected.

2. For submittals marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED.

a. The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with any noted corrections.

3. For submittals marked "AMEND AND RESUBMIT" or "REJECTED – SEE REMARKS"

a. Contractor shall provide a typed letter responding to each of the Engineer's review comments with each resubmittal.

b. Except at its own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is submitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

C. Submittals for Information Only

1. The returned submittal will indicate "ACCEPTED FOR RECORD" if the submittal is complete and adequate.

2. Engineer may return comments on information submittals to identify concerns with what was submitted, in such case, Contractor shall address concerns in writing and return a revised submittal.

1.11 PROCESSING TIME

A. Prepare submittals and transmit to Engineer for review in sufficient time to allow Engineer's review; manufacture, fabrication or assembly of materials and systems; and shipping of material to the site in time for installation in accordance with the Contractor's schedule.

B. Engineer's time for review will begin upon receipt of a complete and comprehensive submittal containing all required information.

C. Engineer will review submitted information and transmit a response to Contractor within 30 days after receipt, subject to the following:

1. In some instances, review times for specific submittals may be modified by the individual specification Section.

2. Resubmittals will be subject to the same review time.

D. No adjustment of Contract Time or Contract Price will be allowed due to delays in the progress of the Work that are caused by rejected submittals and subsequent resubmittals.

1.12 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

A. The purpose of submittals is to demonstrate how Contractor intends to conform to the Contract Documents and design concepts. Engineer is entitled to rely upon the accuracy and completeness of designs, calculations, or certifications made by licensed professionals whether or not a stamp or seal is required by the Contract Documents.

B. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform to the contract documents.

C. Review of contract drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, does not relieve the Contractor of its responsibility for

1. Fulfilling the requirements of the Contract,
2. Proper operation of the equipment,
3. Correction of defective work

D. Reviews shall not be regarded as an assumption of risk or liability by the Engineer or the Owner.

E. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" means that the Owner has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

F. The Engineer's review of shop drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents. The Engineer's review does not extend to:

1. Accuracy of dimensions, quantities, or performance of equipment and systems designed by Contractor.
2. Contractor's means, methods, techniques, sequences, or procedures except when specified, indicated on the Drawings, or required by Contract Documents.
3. Safety precautions or programs related to safety which shall remain the sole responsibility of the Contractor.

G. Review of a separate item does not indicate approval of the assembly in which the item functions.

1.13 SUBSTITUTIONS OR “OR EQUAL” ITEMS

A. Named or Sole Source Times

1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function, and quality required.

2. Unless the name designated a "sole source" and/or is followed by words indicating that no substitution is permitted, materials, or equipment of other Suppliers may be accepted by Engineer if sufficient information is submitted by Contractor to allow Engineer to determine that the material or equipment proposed is equivalent or equal to that named.

B. Initiating Substitution Request

1. To propose to furnish or use a substitute item of material or equipment, Contractor shall use the Proposed "Or Equal" Substitution Submittal Transmittal Form found at the end of this Section.

2. Submit the Substitution Submittal form to Engineer for acceptance, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified.

3. State that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of Substantial Completion on time, whether acceptance of the substitute for use in the Work will require:

   a. A change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for Work on the Project) to adapt the design to the proposed substitute.

   b. Incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

4. Identify all variations of the proposed substitution from that specified

5. Identify available maintenance, repair, and replacement service

6. Provide an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change

7. The Owner or Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

8. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may propose to furnish or utilize a substitute means, method, sequence, technique or procedure of construction. Submit sufficient information to allow Engineer to determine that the proposed substitution is equivalent to that indicated or required by the Contract Documents.

C. Review Procedure

1. The procedure for review of substitutions by Engineer will be similar to that provided in this Section.

2. Requests for substitutions may only be submitted by the Contractor.

3. All requests for substitution shall be submitted within thirty (30) calendar days after the date of Notice to Proceed unless the Owner has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Owner for the late submittal.

4. The Owner's agreement to a later submittal date shall not be construed as favorable review or acceptance of the proposed "or equal" substitution.

5. The Engineer will respond to all requests for substitutions within thirty (30) days following receipt of an acceptable substitution submittal, unless the Engineer notifies the Contractor within fourteen (14) days after receipt of the proposed "or equal" substitution submittal that more time is needed to complete a thorough review.

6. The Engineer and Owner will be the sole judge of acceptability, and no proposed "or equal" substitution item or service will be ordered, installed or utilized without Engineer's prior written acceptance that will be evidenced by either a Change Order or an accepted Shop Drawing.

7. As a condition of acceptance, the Owner may require Contractor to furnish, at Contractor's expense, a special performance guarantee or other surety with respect to a proposed "or equal" substitution item or service.

D. Modification due to Substitutions

1. All costs for redesign required by the implementation of the proposed substitute shall be borne by the Contractor.

2. All costs associated with incorporating a substitution into the project shall be borne by the Contractor.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

SUBMITTAL TRANSMITTAL

Submittal Description _____

Priority Level: ☐ Low ☐ Medium ☐ High ☐ **On Critical Path**

Submittal No.	
☐ 1st Submission	☐Re-Submittal
Spec Section	
Dwg/Detail No.	

No. Copies	Description	Manufacturer	Reviewer Action	Reviewer Initials

We are sending you: ☐ Attached ☐ Under separate cover via _____

☐ Submittals for review and comment

☐ Product Data for information only _____

The Action Designated Above is in Accordance with the Following Legend:	**CONTRACTOR:** Must certify one of the following statements pertaining to the transmittal or submittal sent for review:
A – No Exceptions Taken B – Make Corrections Noted C – Amend and Resubmit D – Rejected E – Review not Required	☐ As the General Contractor for this project we certify that the material or equipment contained in this submittal meets all the requirements, including coordination with all related work specified (no exceptions) ☐ As the General Contractor for this project we certify that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

Comments:

Certified by: _____

(Contractor's Signature)

PROPOSED "OR EQUAL" SUBSTITUTION SUBMITTAL TRANSMITTAL

Proposed "Or Equal Substitution Submittal Description

Submittal No.	
☐ 1st Submission	☐Re-Submittal
Spec Section	
Dwg/Detail No.	

Priority Level: ☐ Low ☐ Medium ☐ High ☐ **On Critical Path**

	Routing	**Date Sent**	**Date Received**
Owner:	Contractor/CM		
Project Name:	CM/Design Consultant		
	Design Consultant/CM		
Contractor:	CM/Contractor		

Proposed "Or Equal" Substitution Item or Service

A. When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed "Or Equal" Substitution items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, will be Favorably Reviewed. Where a product description and first maker's name is followed by "or equal" with no second maker's name, it means the Engineer knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.

B. This request shall include adequate technical information to fully describe the function and quality of the item. Submittals of Proposed "Or Equal" Substitution items that are not made within thirty (30) calendar days of the Notice to Proceed date will be rejected unless the Owner has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Owner for the late submittal. If the Contractor's second attempt to obtain Favorable Review of a Proposed "Or Equal" Substitution item is unsuccessful, the Contractor shall submit the first specified item.

C. Inclusion of a second maker's name indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item. Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed "Or Equal" Substitution items. Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements.

D. The Engineer's review of Proposed "Or Equal" Substitution items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed "Or Equal" Substitution item has the same meaning and is subject to the same limitations that apply to the Favorable Review of Product Data and Shop Drawings described in the Contract Documents.

E. Submit with proposal:

1. Description of item being proposed including the Manufacturer's model or product number.
2. Manufacturer's representation that the proposed "or equal" substitution item or service is equal to or superior to specified item in all respects.
3. Manufacturer's product data.
4. Information about several recent similar installations, including project name, owner's name, address, telephone number, and name of knowledgeable person to contact for information on performance of the product.

5. Whether a reduction in the Contract Price is being proposed. If so, provide a detailed cost breakdown substantiating the cost reduction. Consideration should be given to all extra costs and expenses necessary to make the proposed “or equal” substitution meet or exceed the all requirements found in the Contract Documents.
6. Whether a reduction in the Contract Time is being proposed. If so, provide schedule analysis substantiating the reduction in contract time and assumptions made in the schedule analysis.
7. Explain all known differences between the product specified and the Proposed “Or Equal” Substitution. Explanation to consider such items as:

a) Does the substitution affect dimensions shown on Drawings?

b) Are the manufacturer's guarantees and warranties on the proposed substitution items identical to those on the specified items? If there are differences, please specify each and every difference in detail.

c) Does the proposed “or equal” substitution impact other contractors, trades or suppliers?

d) Is the proposed “or equal” substitution compatible with all other interrelated equipment, materials and products?

e) Any differences in Operations and Maintenance costs?

f) Any differences in available factory authorized repair centers with regards to response times and geographic location?

g) Will use of proposed “or equal” substitution be subject to any license fee or royalty?

h) Are there any color or pattern differences? If so, provide color and pattern samples?

The undersigned hereby:

1. Certifies that he/she has thoroughly investigated the Proposed “Or Equal” Substitution item or service and has determined that the function/utility, appearance and quality of the Proposed “Or Equal” Substitution item or service are equivalent or superior to those of the specified item;
2. Certifies that the Proposed “Or Equal” Substitution item or service is compatible with all interrelated equipment, materials, products and services unless otherwise explained in specific detail in this submittal;
3. Agrees to coordinate installation and make all other changes that may be required for Work to be complete in all respects at no additional cost to the Owner;
4. Waives all claims for additional costs and contract time due to late ordering of the specified products or services caused by requests for “Or Equal” Substitutions that are subsequently rejected by the Engineer;
5. Represents and warrants that the Contractor is solely responsible for any extra cost or expense necessary to make the Proposed “Or Equal” Substitution item or service fully equivalent to and compatible with the Contract Documents and will meet or exceed the Engineer’s design intent;
6. Agrees to compensate the Owner for all additional redesign costs associated with the Proposed “Or Equal” Substitution item or service and the cost of the Engineer’s review of the Proposed “Or Equal” Substitution item or service;
7. Waives all claims for additional costs and contract time which may subsequently become apparent; and
8. Agrees to comply with all additional requirements imposed by the Owner and Engineer should the Proposed “Or Equal” Substitution item or service is approved.

Submitted by: _____

Contractor: _____

Name: _____

Signature: _____ Title: _____

Date: _____

SECTION 01340

REQUESTS FOR INFORMATION AND CLARIFICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedures for submitting requests for information and clarifications when Contractor discovers apparent conflicts, omissions, or errors in the Contract Documents, or upon having any questions concerning interpretation of the Contract Documents.

1.02 REFERENCED SECTIONS

A. None

1.03 PROCEDURES

A. Notification:

1. Notify the Engineer in writing and request interpretation, clarification, or additional detailed instructions concerning the Work.

2. Ask for clarification or request information immediately upon discovery, but no less than seven working days prior to the start date of the activities related to the clarification, based on the latest updated version of the official contract schedule.

B. Form:

1. Submit requests for clarification and/or additional information in writing to the Engineer using the Request for Information (RFI) form provided at the end of this Section.

2. Provide a detailed statement indicating the nature of the information requested. Reference specific Drawings and Specifications as appropriate.

3. Limit each written request to one topic.

4. Electronic (*.pdf) format RFIs are preferred. Prepare RFIs and any attachments in electronic format. Transmit electronic RFIs via email to the Engineer. Break down RFIs that are larger than 4 megabytes into smaller sections, using logical division points to create sections.

5. Hard copy RFIs are an acceptable alternative to electronic RFIs if the Contractor demonstrates, to the satisfaction of the Engineer, that electronic format presents a hardship. If hard copies are used, furnish six (6) copies of each RFI.

C. Numbering:

1. Use consecutive numbers for each new form submitted. When RFI's are re-submitted to request additional information on the same topic, add a letter A, B, C, etc. to the numbering system for each subsequent RFI until the subject is resolved.

1.04 REASONS FOR SUBMITTAL

A. Submit an RFI if one of the following conditions occur:

1. An unforeseen condition or other circumstance that is not described in the Contract Documents.

2. An apparent conflict or discrepancy between portions of the Contract Documents.

3. An apparent omission from the Contract Documents.

4. Information presented in the Contract Documents is unclear or additional details are needed to undertake the Work.

1.05 RESPONSE TIME

A. The Engineer will resolve the RFI and issue instruction to the Contractor within 15 calendar days.

B. Response time may need to be lengthened; or shortened for emergency situations as mutually agreed upon by all parties.

C. Do not proceed with the affected work before receipt of a response from the Engineer. Should the Contractor elect to proceed with the Work affected by the RFI, any portion of the Work that is not done in accordance with the Engineer's interpretation, clarifications, instructions or decisions will be subject to removal or replacement at the Contractor's expense.

1.06 REJECTIONS

A. RFI's submitted by the Contractor may be rejected by the Engineer for the following reasons:

1. The RFI is submitted as a substitute for a submittal.

2. Under the pretense of a Contract Documents discrepancy or omission without thoroughly reviewing the documents.

3. In a manner that suggests that specific portions of the Contract Documents are assumed to be excluded, or be taken as an isolated portion of the Contract Documents in part rather than whole.

4. In an untimely manner without proper coordination and scheduling of work or related trades.

1.07 ADDITIONAL DETAILED INSTRUCTIONS (CLARIFICATIONS)

A. The Owner may furnish additional detailed written instructions to further explain the Work and these instructions shall become part of the Contract Documents. Clarifications will be issued using the above RFI system.

B. When, in the opinion of the Contractor, the Engineer's response in the RFI constitutes additional work beyond the scope of the Contract, the Contractor shall notify the Engineer in writing following receipt of the RFI and prior to initiating the Work affected by the RFI. The process for submitting claims of additional Work shall be followed as defined in the General Conditions. Lack of compliance with this notification requirement will cause Contractor to forfeit any claim for additional compensation or extension of the schedule.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

REQUEST FOR INFORMATION

RFI No.: XXX

Owner: _____

Project: _____

Contractor: _____ Engineer _____

RFI Generated by: ☐ Contractor ☐ CM ☐ Other

Priority Level: ☐ Low ☐ High ☐ On Critical Path

Is there a Cost Impact associated with this RFI? ☐ Yes ☐ No ☐ Possibly

Is there a Time Impact associated with this RFI? ☐ Yes ☐ No ☐ Possibly

RFI Title:

Reference: Spec: Sheet:

Requested Information:

Signed: _____ Date: _____

Response:

Signed: _____ Date: _____

SECTION 01500

CONSTRUCTION FACILITIES AND UTILITIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for Contractor's temporary facilities at the job site and for the prosecution of the Work.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section.

1. Section 01330 – Submittals

1.03 SUBMITTALS

A. Provide the following information in accordance with Section 01330.

1. Proposed plan and layout for all temporary offices, designated parking areas, sanitary facilities, storage yards, temporary water service and distribution, temporary sewer connection, temporary phone service, temporary power service and distribution, and temporary fire equipment access roads.

2. Proposed layout (site and floor plan) of Contractor's and Construction Manager's office trailers, if required. Include manufacturer's name and product literature.

3. Proposed equipment list. Include manufacture's name and product literature.

4. Proposed service and maintenance contracts for offices, alarm, and cleaning service.

5. Proposed layout of parking area, staging area, field office trailers, storage buildings and workshops.

1.04 CONTRACTOR'S CONSTRUCTION OFFICE

A. Maintain copies of the Drawings, Specifications, and other Contract documents at the site and make these available for use at all times.

1.05 STAGING AND WORK AREAS

A. Before starting the work, submit a proposed plan and layout for all temporary offices, sanitary facilities, storage areas, temporary water service and distribution, and temporary power service and distribution.

B. Confine equipment, materials storage and all construction activities within the staging area(s) shown on the Drawings and within City property. Procure

agreements with private property owners prior to mobilization. Coordinate with the City for use of City property.

C. Erect temporary security fence as appropriate. Contractor is responsible for the security of the staging area. Owner and Engineer do not take any responsibility for missing or damaged equipment, tools or personal belongings.

D. Store only those materials and equipment that are related to the construction within the staging area.

1.06 FENCES

A. Erect temporary fences at the boundary of construction easements and in locations indicated on the Drawings to protect existing wetlands and other environmentally sensitive areas.

B. When existing fences require temporary removal, and these fences are required to restrain animals and stock, erect fences to prevent animals from escaping. Contractor shall be responsible for loss, injury or damage that results from failure to restrain animals and stock.

C. When working in open areas where animals and stock are maintained, provide adequate temporary fencing around open excavations to prevent injury to animals and stock.

1.07 TEMPORARY ACCESS ROADS

A. Construct temporary access roads where access to various portions of the site is otherwise unavailable.

1. Construct a point of access that will allow Contractor to gain access onto the property.

2. Install temporary ditches and culverts as necessary to direct rainfall runoff away from construction areas, access road, equipment laydown areas, and temporary stockpile areas. Contractor to determine appropriate size of culvert. Backfill the culvert with gravel and compact to provide a stable and durable access point.

3. Temporarily remove a section of the existing fence and install a security gate with lock.

4. At the conclusion of the work, remove all temporary facilities, re-grade drainage ditches and return the area to its original condition.

5. Contractor is responsible for securing the property until fencing is returned to original conditions and all temporary fences, culverts and backfill material has been removed and the area returned to its original condition.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL:

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 105.08.00.

3.02 TEMPORARY ELECTRIC POWER

A. Contractor shall make provisions to obtain temporary electric power for use during construction. The Contractor shall be responsible for obtaining a source of electric power for construction.

B. Cost of electric power shall be borne by the Contractor.

C. The temporary electric power installation shall meet the construction safety requirements of OSHA, state, and other governing agencies.

3.03 TEMPORARY TELEPHONE SERVICE

A. Provide telephone service at the construction site office. Cellular telephone service is acceptable.

B. The Contractor is not permitted to use the Owner's telephone service.

3.04 TEMPORARY SANITARY FACILITIES

A. Provide toilet and wash-up facilities for the construction work force at the site of work.

B. Facilities shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of construction field offices, dwellings, and camps.

3.05 TEMPORARY WATER SUPPLY

A. Use City of Albany potable water for construction uses.

B. Obtain approvals and authorizations from the City prior to use of potable water and pay all fees associated with consumption of the potable water.

C. The City will supply the water required for the Project from approved hydrant locations with a hydrant meter and appropriate backflow prevention device. Coordinate with the City.

END OF SECTION

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SECTION 01505

MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.01 MOBILIZATION

A. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the site; for the establishment of all facilities necessary for work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work, on the various items on the project site.

B. Mobilization shall also include the construction of temporary access ways; temporary fencing; and the necessary preparatory work required to allow for the safe and stable movement of all vehicles that are required to construct the improvements as shown.

1.02 DEMOBILIZATION

A. Demobilization shall consist of work and operations necessary to disband all mobilized items and clean up the site. The removal of all temporary access ways, signs, temporary fencing, and temporary facilities or works and the restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

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SECTION 01550

TRAFFIC CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Contractor furnished labor, materials, equipment, tools, and services necessary to provide access to the motoring and pedestrian public; and adequately safeguard the workers and public from construction hazards with a minimum of inconvenience.

B. Work includes but is not limited to the following:

1. Preparation of Traffic Control Plans (detailed drawings) and obtaining approval of Traffic Control Plans from the Owner's Representative.

2. Masking and restoring permanent signs and striping.

3. Erection and removal of temporary construction signs.

4. Installation and removal of temporary traffic control devices, including barriers and barricades, street closure and detour implementation.

5. Coordinating work with all agencies having jurisdiction.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 PROJECT SPECIFIC REQUIREMENTS

A. Lane closures during peak hours shall be limited to the extent possible.

B. At least one lane shall be open to traffic at all times.

C. Road closures shall be restricted to block by block segments as approved by the Owner's Representative.

D. Allow local traffic only during working hours.

1.04 REFERENCE STANDARDS

1. Comply with the latest editions of the following reference standards:

2. Oregon Department of Transportation's (DOT) "Sign Policy and Guidelines for the State Highway System.

3. The Federal Highway Administration "Manual on Uniform Control Devices (MUTCD) and the Oregon Supplement to the Manual on Uniform Traffic Control Devices.

4. FHWA "Standard Highway Sign" manual.

5. Oregon DOT “Oregon Temporary Traffic Control Handbook for Operations of 3 Days or Less” when directed by the Owner’s Representative only for mobile pavement marking operations or surveying work.

6. Oregon Department of Transportation Standard Specifications, most recent edition.

7. OSHA, Code of Federal Regulations.

   a. Title 19, Part 1926, Construction Safety and Health Regulations.

   b. Title 29, Part 1910, Occupational Safety and Health Standards.

B. In case of conflict between the above reference standards and the specifications contained herein, these specifications shall take precedence and be used in lieu of such conflicting portions.

1.05 SUBMITTALS

A. Traffic Control Plans: According to the requirements of Section 01330, submit, at least three (3) weeks prior to work, Traffic Control Plan drawings which conform to all requirements of these specifications, approved by the Owner’s Representative. Traffic Control Plans shall be provided for roadways and intersections affected by construction.

B. A traffic control plan shall include systems of closing traffic lanes in accordance with the details shown on Oregon Standard Drawing TM840, the provisions of Section 00225, "Work Zone Traffic Control," of the State Standard Specifications, the MUTCD, and the Oregon Supplement to the Manual on Uniform Traffic Control Devices.

C. Traffic control plans shall be site specific. Standard plans may be referenced, but details shall be depicted on maps, images, or figures of actual road configurations at specific locations along the project. Photo copies of typical traffic control lane closure samples from the MUTCD, State Standard Drawings or any other manuals will not be accepted.

D. All signs, signals, pedestrian and vehicle ramps, and barricades shall conform to the requirements of OSHA Construction Safety and Health Regulations. A Traffic Control Plan shall be submitted to the Engineer and agencies having jurisdiction for review and approval. Traffic Control Plan shall contain, but not be limited to the following:

1. Circulation and detour plans to minimize impacts on local street circulation during road closures.

2. Show the existing intersection lane configuration and the appropriate traffic control application for each approach. Location, placement, monitoring schedule and movement of all traffic control devices to be used to guide vehicles through and/or around the construction zone including, but not limited to, proper lane tapers, signs, flashing arrow boards, portable changeable message signs, “work ahead” and other advance warning signs, signals, pedestrian and vehicle ramps, barricades and flaggers.

3. For work within all other intersections, use a flagger to control the intersection in addition to the mobile operation. There shall be at least one (1) flagger assigned to each intersection approach.

4. Identification of truck routes that minimize truck traffic on local roadways and residential streets will be utilized to the extent possible.

5. Identification of detours for bicycles, where applicable, in all areas affected by project construction.

6. Provisions for pedestrian access through the work zone during construction. If the work impacts any pedestrian pathway such as sidewalks, curb ramps, and crosswalks, the traffic control plan shall include a pedestrian handling plan to direct pedestrians safely through the construction work zone. The pedestrian handling plan shall conform to the most current MUTCD, Oregon Supplement to the MUTCD, and State Standard drawings and may include pedestrian detours, signs, temporary pedestrian path and ramps.

7. Sufficient staging areas for trucks accessing construction zones to minimize disruption of access to adjacent land uses, particularly at entries to onsite pipeline construction within residential neighborhoods.

8. Control and monitoring of construction vehicle movement through the enforcement of standard construction specifications by onsite inspectors.

9. Scheduling of truck trips outside the peak morning and evening commute hours to the extent possible.

E. The traffic control plans shall be submitted for all streets in the agency having jurisdiction as one package for review by the agency having jurisdiction; partial submittals may be rejected.

F. The contractor shall be responsible for coordinating development of the Traffic Control Plan with the City of Albany.

G. No work will be allowed on city streets until the Contractor obtains written approval of the proposed Traffic Control Plan from agencies having jurisdiction.

H. The temporary closure of a signalized intersection, when necessary, shall be done in accordance with a traffic control plan approved by the agency having jurisdiction prior to the start of work. Inform the Transportation Engineering Division of the agency having jurisdiction of the anticipated signal shutdown at least five (5) working days in advance of the work.

1.06 QUALITY ASSURANCE

A. No changes or deviations from the approved Traffic Control Detail shall be made, except temporary changes in emergency situations, with prior approval of the Traffic Engineer, the Construction Manager, and all agencies having jurisdiction.

B. Any revisions to the traffic control plans shall be submitted by agency having jurisdiction 10 days in advance of the work.

1.07 REQUIRED NOTIFICATION

A. Notify the Owner's representative and Engineer at least 48 hours prior to lane, roadway or ramp closures, reopenings, or partial obstruction of roadways.

B. Coordinate construction with the Owner's representative. The Owner's representative will notify law enforcement, fire and other emergency services. Facility owners or operators shall be notified in advance of the timing, location, and duration of construction activities and the locations of detours and lane closures.

PART 2 - MATERIALS

2.01 TRAFFIC CONTROL DEVICES

A. Traffic control devices shall conform to the Oregon DOT Standard Specifications Section 00225 "Work Zone Traffic Control," and to the MUTCD and the agency having jurisdiction.

B. Included, but not limited to, are flag units, construction signs, channelizing devices, barricades, delineators, and lighting devices.

C. All signs which are to convey their messages during darkness shall be reflectorized or illuminated.

D. No signs or supports shall bear any commercial advertising.

PART 3 - EXECUTION

3.01 PLACEMENT OF TRAFFIC CONTROL DEVICES

A. Install, inspect, move, and operate traffic control devices according to the traffic control plan, these specifications, and reference standards.

B. Install, maintain, and move all traffic control devices by working with the direction of traffic.

C. Provide additional traffic control measures according to these specifications and referenced standards, when necessary or directed.

D. Store all equipment and materials in designated contractor staging areas or adjacent to the worksite, such that traffic obstruction is minimized.

E. Implement all roadside safety protocols. Advance "Road Work Ahead" warning and speed control signs (including those informing drivers of state legislated double fines for speed infractions in a construction zone) shall be posted to reduce speeds and provide safe traffic flow through the work zone. All excess and unsuitable material resulting from the Contractor's operation shall be removed as it develops and before the end of each workday.

3.02 MAINTENANCE OF TRAFFIC CONTROL DEVICES

A. If any component of the traffic control system is displaced or ceases to operate or function as specified from any cause, during the progress of the work, immediately

repair the component to its original condition or replace the component, and restore the component to its original location.

B. In the event the Contractor fails to provide and maintain proper barricades, signs, and other traffic control devices within one hour after notification by the Engineer, the City may install the traffic control devices at the Contractor's expense. The City will deduct two times (200%) the City's actual cost, which will include all labor, equipment, and materials involved, from any payments due or coming due to the Contractor.

3.03 REMOVAL OF TRAFFIC CONTROL DEVICES

A. Remove the existing TCD as directed when they are not necessary or conflict with temporary devices. Remove and obliterate, without damaging the wearing surface, all evidence of all temporary TCD when the Contract is complete.

B. Remove TCD in the reverse sequence of the installation.

C. When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavations adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, approved by the agency having jurisdiction.

3.04 ACCESS TO ADJACENT PROPERTIES

A. All public and private roadways and driveways within the project area shall be fully opened to local traffic at the end of each workday and at all times when no work is taking place. When the progress of the work requires temporary closures of residential driveways, the Contractor shall provide notice to the affected residential properties 48-hours in advance of the closure. Access to residential driveways shall be reestablished as soon as possible. The Contractor shall maintain continuous access to commercial and industrial properties except during paving operations. The Contractor shall meet on-site with the manager of each business a minimum of 72-hours in advance of any work affecting access to their property and inform them of the measures taken to maintain access. The Contractor shall place and maintain "DRIVEWAY OPEN" signs at commercial driveways to guide customers and deliveries to the appropriate entrances during the work. The signs shall be repositioned on a continuous basis as the progress of the work requires.

B. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times.

C. Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets and other drainage facilities.

3.05 STREET CLOSURE

A. No streets may be closed without first obtaining approval, in writing, from the City of Albany. If permission is granted, it shall be the Permittee's responsibility to notify the agencies/departments in Paragraph 1.07 prior to closing the street.

B. Request for street closure shall include detour and signage plans.

3.06 TRAFFIC COORDINATION WITH OTHER CONTRACTORS

A. Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of the work hereunder, and the Contractor shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas.

B. Coordinate the traffic routing work with that of other forces working in the same or adjacent areas.

3.07 CONSTRUCTION PARKING CONTROL

A. Curb parking shall be removed in accordance with the Traffic Control Plan. Removal of curb parking shall be minimized.

B. Make arrangements directly with local authorities to keep the working area clear of parked vehicles.

C. The Contractor may prohibit stopping in parking lanes where and when necessary in order to gain access to the work to provide the required traffic lanes in city streets and parking areas.

D. Coordinate with local authorities for the location of "No Stopping" and "No Parking" signs.

E. At least one (1) week in advance of construction, furnish and place portable "TOW AWAY – NO STOPPING" signs where approved by local authorities and the Owner's Representative. The dates and times of parking removal shall be posted on the signs.

F. Contractor is responsible for ensuring signs stay posted. "No Parking" signs shall be posted at a minimum spacing of 100 feet on portable barricades, delineators or similar devices furnished by the Contractor. In addition, a minimum of one (1) "No Parking" sign shall be posted between all driveways where on-street parking is normally allowed. Posting of "No Parking" signs will not be allowed on trees, sign posts, fences, etc.

G. All "No Parking" signs shall list the anticipated dates of work. Dates posted on all "No Parking" signs shall be limited to provide a maximum two-day construction window unless otherwise authorized by the Engineer. If the work is not performed during the timeframe indicated on the "No Parking" signs, the work shall be rescheduled with at least five (5) working days advance notice. Leave the streets open to traffic until just prior to starting the work, and provide all barricades, signs and traffic control measures necessary to protect the work. The Contractor, at his

expense, will perform all re-posting of "No Parking" signs and re-notification of business and residents as a result of his failure to meet the posted schedule.

H. Any delays caused by failure of the Contractor to adhere to the approved schedule will be at the Contractor's sole expense. No additional compensation will be allowed for costs resulting from said delays.

I. Notify local authorities of all parking violators who require tow away from construction areas.

J. Construction equipment not actively engaged in the work and employee vehicles shall not be parked in the vicinity of the work in such a manner as to further restrict or obstruct traffic flow.

K. Vehicles and equipment in continuous or frequent use may be operated or parked in the same traffic lane as the work obstruction.

3.08 CONSTRUCTION SIGNING

A. All construction area signs and sign spacing shall conform to the MUTCD and Oregon Supplement to the MUTCD.

B. Signs normally shall be installed immediately before work is to commence and must be removed immediately after work is complete. If at any time a sign is not required, it shall be covered or removed.

C. The Contractor shall be responsible for the placement of advisory signs to inform the public of any street closure, detour, or construction affecting traffic at least 7 days before the closure or other significant disruption of normal traffic flow.

D. Existing roadside signs conflicting with the construction area signs shall be either removed and reset upon completion of work or securely covered.

3.09 ILLUMINATION

A. Provide sufficient visibility on a 24-hour basis to approaching traffic whenever a street is closed partially or completely. Ensure that sufficient illumination is provided by means of portable flashing beacons, floodlights, or other similar devices. Mount all lighting fixtures in a manner which precludes glare to approaching traffic.

B. All barricades and obstructions shall be illuminated at night, and all lights shall be turned on from sunset until sunrise.

C. Arrow boards or other traffic control devices and lighting which will operate outside of the normal working hours shall be battery-operated. The use of gas-fired generators during nonworking hours will not be allowed.

3.10 FLAGGING

A. Flaggers shall be required:

1. Where workers or equipment intermittently block a traffic lane.

2. When trucks or equipment enter or leave the work site from an adjacent traffic lane

3. Where plans or permit allow the use of one lane for two directions of traffic.

4. Wherever the safety of the public and/or workers determine there is a need.

B. Locate flaggers far enough in advance of the work area to permit adequate time for the motorist to respond to the flagger's instructions. All flaggers, including advance flaggers, shall use a STOP/SLOW paddle. Do not use the rollup STOP/SLOW paddle for non-emergency flagging operations.

C. Flagging shall be carried out in accordance with the approved Traffic Control Plan.

D. Flagging costs shall be considered as included in pay items for traffic control.

3.11 PEDESTRIAN SAFETY AND BICYCLE ACCESS

A. Maintain safe and adequate pedestrian zones and public transportation stops as well as provide pedestrian crossings at intervals not to exceed 300 feet within the work zone.

B. When the construction area crosses a crosswalk, the crosswalk shall be barricaded and sign "No Ped Crossing Use Crosswalk" posted.

C. Maintain pedestrian and bicycle access and circulation during project construction where safe to do so. If construction activities encroach on a bicycle lane, advance warning signs (e.g., "Bicyclists Allowed Use of Full Lane" and/or "Share the Road") will be posted that indicate bicycles and vehicles are sharing the lane. If construction activities encroach on a sidewalk, safe crossings and appropriate signage will be provided for pedestrians.

3.12 NIGHT WORK

A. No night work shall be permitted unless requested in writing by the Contractor and approved in writing by the agency having jurisdiction. In addition to schedule information traffic control and detour plans for specific locations shall be part of the Contractor's request for night work.

B. For all night work locations approved in writing, provide advanced special message signs placed at least seven (7) days prior to closing the intersection, but not more than fourteen (14) days in advance of the intersection closure. The advanced special message sign shall state the anticipated closure dates and times as shown on the plans. Notify the agency having jurisdiction not less than fourteen (14) calendar days prior to installing the advance intersection closure warning signs.

C. The Contractor shall be responsible for maintaining accurate and timely information on the advanced special message signs. The signs, when no longer required or when the information becomes outdated, shall be immediately covered or removed, or the sign message shall be updated.

END OF SECTION

SECTION 01560

ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Environmental controls to be maintained during construction.

1.02 APPLICABLE LAWS AND REGULATIONS

A. Comply with applicable Federal, State and local environmental, health and safety laws and regulations.

1.03 SUBMITTALS

A. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.

B. Plan for disposal of waste materials and intended haul routes.

C. Dust control plan.

D. Erosion and Sediment Control Plan meeting the requirements of the latest edition of the City of Albany Erosion Prevention and Sediment Control Manual.

1.04 SITE CLEANLINESS

A. Maintain work sites, staging areas, public roadways and private property clean and free of rubbish and debris. Remove materials and equipment from the site when they are no longer necessary for the Work.

B. Keep buildings that are occupied by the Contractor clear of refuse and debris and in a reasonably neat condition.

C. Upon completion of the work and before final acceptance, clear work areas of equipment, unused materials, and rubbish to present a clean and neat appearance.

1.05 HAZARDOUS MATERIALS

A. Handle paints, solvents, and other construction materials with care to prevent contaminants from entering into sewers, storm drains, surface waters, or soils.

B. Develop an emergency response plan for spills of sewage, paint, oil, and other hazardous materials.

C. In the event of a spill, immediately notify the Engineer, Owner and jurisdictional agencies. Take proper measures to clean up spills of hazardous materials in accordance with the emergency response plan, State, Federal, and local regulations and manufacturer's recommendations.

1.06 AIR POLLUTION CONTROL

A. Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the air pollution regulations for the area.

B. Do not idle internal combustion engines for prolonged periods of time.

C. Minimize dust nuisance by cleaning, sweeping and sprinkling work areas, exposed soil, and haul roads with water or by powered brushing.

1.07 NOISE CONTROL

A. Comply with local controls and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the Contract. If the requirements of this Section are more restrictive than those of the local regulations, the requirements of this Section shall govern.

B. Minimize noise from construction equipment.

1. Whenever possible, utilize construction equipment powered by electric motors rather than diesel or gas driven engines.

2. Locate construction equipment such as compressors and generators as far from sensitive receptors as feasibly possible. Erect temporary sound blankets around noisy equipment to mitigate noise propagation.

3. Equip internal combustion engines with a muffler and provide a noise enclosure around stationary equipment such as engine-driven generators, welders, compressors, and pumps. Use “quiet package” and “hush” equipment.

4. Do not start-up machines or equipment prior to or after the specified construction work hours.

C. Noise Complaints: Should a specific noise impact complaint occur, Engineer has the prerogative to direct Contractor to implement one of the following noise mitigation measures at Contractor’s expense:

1. Relocate stationary construction equipment away from the affected property.

2. Shut off idling equipment.

3. Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.

4. Install temporary or portable acoustic barriers around stationary construction noise sources.

5. Operate electric powered equipment using utility power.

D. Amplified sounds such as telephone, loudspeakers, and other forms of loud communication that constitute a nuisance and potential disturbance shall not be used.

1.08 DIRT AND MUD CONTROL

A. Contractor is responsible for preventing dirt, mud, and debris from accumulating on streets, sidewalks, parking areas, or other paved surfaces and for maintaining the cleanliness of these areas.

1. Track Out: Clean vehicle tires of mud and dirt before exiting the site.

2. Cover all dump truck loads and other loads that may result in debris falling from the vehicle.

3. Sweeping Paved Areas:

a. Maintain cleanliness of paved areas used by the Contractor for the duration of the project.

b. Sweep paved areas that have been used since the previous cleaning on at least a weekly basis, or more frequently when directed by the Engineer. Utilize regenerative air or vacuum pickup sweepers together with proper dust control methods to remove sediment, dust, dirt, and other matter from paved areas. Do not use excessive water resulting in mud on public streets.

1.09 TREE AND PLANT PROTECTION

A. Temporary tree protection

1. Carefully protect existing trees from damage by construction activities. Additional requirements for specific trees may be shown on the Plans or designated in the Contract Documents.

2. Every reasonable effort shall be made to avoid creating conditions adverse to the tree's health.

a. The natural ground within the dripline of protected trees shall remain undisturbed.

b. The dripline area of protected trees shall be identified on the ground by a circle with a radius measurement from the trunk of the tree to the tip of its longest limb.

c. No limb shall be cut back in order to change the dripline measurement.

d. The area within the dripline is a critical area of the tree's root zone and defines the minimum protected area of each tree.

e. No vehicles, construction equipment, temporary buildings, supplies, materials or facilities shall be driven, parked, stockpiled or located within the dripline of protected trees.

f. No trees outside the construction limits shall be removed or damaged, unless authorized by the Engineer.

3. If a tree is damaged or destroyed by construction (other than those designated for removal), the Contractor shall replace it in species, size and grade with a healthy tree as directed by the Engineer. Where it is necessary

to replace a tree damaged by construction, the Contractor shall bear all expenses required to establish the replacement tree and pay any tree removal fees.

B. Cultivated areas and other surface improvements:

1. Landscaped areas and other surface improvements which are damaged by actions of the Contractor shall be restored.

2. Minimize vegetation removal.

3. Areas shall not be cleared until construction activities require the work.

4. Erosion controls shall be in place prior to clearing and grading activities.

C. Other areas to be protected:

1. Environmentally sensitive areas are to be protected. Verify with the Owner if any environmentally sensitive areas require additional protection.

2. Erect a protective fence around the area to be protected.

a. The protective fence shall be 4 feet tall, international orange high density polyethylene resin (Visi-Barrier or equal).

b. Posts shall be heavy duty steel T-posts with corrosion resistant coating spaced at 5 feet on centers.

1.10 OIL SPILL PREVENTION AND CONTROL

A. Store fuel and oil in accordance with requirements of the Uniform Fire Code and applicable National Fire Protection Association standards.

B. Assume responsibility for the prevention, containment, and cleanup of spilled oil, fuel, and other petroleum products used in the Contractor's operations. Prevention, containment and cleanup costs shall be borne by the Contractor.

C. Periodically inspect fuel hoses, lubricating equipment, hydraulically operated equipment, oil drums, and other devices for drips, leaks or signs of damage. Maintain and properly store to prevent spills and vandalism.

D. Construct dikes around storage tanks, or locate tanks to prevent spills from escaping to surface waters or drainage ditches.

E. Remove oils on land using sand, clay, sawdust or other absorbent material and dispose in an acceptable manner. Store waste materials in drums or other leak proof containers after cleanup and during transport to disposal.

1.11 WATER POLLUTION CONTROL

A. Divert sanitary sewage and nonstorm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.

B. Prior to commencing excavation and construction, obtain Project Manager's agreement with detailed plans showing procedures intended to handle and dispose

of sewage, groundwater, and stormwater flow, including dewatering pump discharges.

C. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

1.12 EROSION, SEDIMENT, AND FLOOD CONTROL:

A. Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

B. Comply with state and local City of Albany requirements including but not limited to the City of Albany Erosion Prevention and Sediment Control Manual, latest edition.

C. A significant portion of the work is along and within the banks of the Willamette River. The Contractor's Erosion and Sediment Control Pan must address how the installation, maintenance, and removal and/or reestablishment of erosion control devices will prevent introduction of sediments into the Willamette River. The Contractor will be responsible for any costs incurred due to soil erosion and the deposition of sediments onto rights-of-way; or introduction of sediments into wetlands, drainage ways, the municipal stormwater system, receiving waters, and/or areas that contain or contribute directly to the Waters of the State.

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

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SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Materials, equipment and products incorporated into the work.

1.02 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Specified in individual specification Sections in Division 2.

B. Specifications are minimum requirements and manufacturers' standard products may require modifications to meet the specified requirements.

C. Provide products and equipment with all accessories, trim, finish, safety guards and other devices needed for a complete and operational installation.

D. Products to be supplied in quantity shall be the same product from a single source to provide standardization and interchangeability.

1.03 DEFINITIONS

A. Named Products: Items identified by manufacturer's product name and model number as indicated in the manufacturer's published product data.

B. Materials: Products that are shaped, cut, worked, finished or otherwise fabricated or installed to form a part of the Work.

C. Equipment: A product with working parts, whether motorized or manually operated, that requires connections such as wiring or piping.

1.04 PACKAGING AND MARKING

A. Equipment shall be protected against damage from moisture, dust, handling, or other cause during transport from manufacturer's premises to site. Each item or package shall be marked with the number unique to the specification reference covering the item.

B. Stiffeners shall be used where necessary to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or subassembled units where possible.

C. Bearing housings, vents and other types of openings shall be wrapped or otherwise sealed to prevent contamination by dust and dirt.

1.05 SHIPPING AND DELIVERY

A. Plan, order, coordinate and deliver materials and equipment in accordance with the construction schedule to avoid delays and conflicts with the Work.

B. Deliver anchor bolts and bolt templates sufficiently early to permit setting and placement in structural concrete.

C. Unload products in accordance with the manufacturer's handling instructions. Promptly inspect for completeness and evidence of damage during shipment.

1.06 HANDLING AND STORAGE

A. During the interval between the delivery of equipment to the site and installation, all equipment, unless otherwise specified, shall be stored in an enclosed space affording protection from weather, dust and mechanical damage and providing favorable temperature, humidity and ventilation conditions to ensure against equipment deterioration. Manufacturer's recommendations shall be adhered to in addition to these requirements.

B. Equipment and materials to be located outdoors may be stored outdoors if protected against moisture condensation. Equipment shall be stored at least 6 inches above ground. Temporary power shall be provided to energize space heaters or other heat sources for control of moisture condensation. Space heaters or other heat sources shall be energized without disturbing the sealed enclosure.

C. Fabricated products, pipe and pipe appurtenances shall be handled, stored off the ground on blocking or skids. Pipes with paint, tape coatings, linings or the like shall be stored to protect the coating or lining from physical damage or other deterioration. Pipes shipped with interior bracing shall have the bracing removed only when recommended by the pipe manufacturer.

D. Store loose granular products in well-drained area on a solid surface to prevent mixing with foreign matter. Cover products that are subject to erosion or deterioration with plastic sheeting.

E. Store electrical, instrumentation and control products in a water-tight enclosure to protect against damage from moisture, dust and corrosion.

1.07 PROTECTION OF EQUIPMENT AFTER INSTALLATION

A. After installation, protect equipment from damage from, including but not limited to, dust, abrasive particles, debris and dirt generated by the placement, chipping, sandblasting, cutting, finishing and grinding of new or existing concrete, terrazzo and metal; and from the fumes, particulate matter, and splatter from welding, brazing and painting of new or existing piping and equipment.

B. As a minimum, vacuum cleaning, blowers with filters, protective shielding, and other dust suppression methods will be required at all times to adequately protect all equipment.

C. When sandblasting or when finishing concrete, all equipment that may be affected by cement dust shall be completely covered. Electrical switchgear, substations and motor load centers shall not be installed until after all concrete work and sandblasting in those areas have been completed and accepted and the ventilation systems installed.

D. During painting operations, all grease fittings and similar openings shall be covered to prevent the entry of paint.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to installation, inspect materials and equipment for signs of corrosion and other effects of storage. Do not install material or equipment showing such effects.

B. Remove damaged material from the site and expedite delivery of replacement material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays that are within the Contractor's control.

3.02 INSTALLATION

A. Handle, install, connect, clean and adjust products in accordance with the manufacturer's instructions.

END OF SECTION

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SECTION 01770

CONTRACT CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for contract closeout.

1.02 (NOT USED)

1.03 FINAL CLEANING

A. Immediately prior to submittal of a request for inspection for Final Completion, clean the project site and make ready for Owner's use and occupancy.

B. Employ experienced workers or professional cleaners for final cleaning.

C. Complete the following cleaning operations:

1. Clean the project site, yard and grounds which were disturbed by construction activities. Remove rubbish, waste material, litter and other foreign material.

2. Sweep paved areas, remove oil stains, grease, dust and dirt.

3. Remove tools, construction equipment, machinery, storage sheds, temporary fences and surplus material.

4. Broom clean sidewalks and concrete floors.

5. Patch, touch up and repair marred surfaces and finishes. Replace finishes and surfaces that cannot be satisfactorily repaired or restored.

1.04 FINAL COMPLETION

A. Final Completion Submittals:

1. Prior to submitting final Application for Payment, complete and submit the following:

a. Guaranty and Warranties.

b. Punch List with all corrective actions completed and ready for Final Inspection.

c. Releases from Agreements with property owners or public agencies.

d. Releases or Waivers of Liens and Claims.

e. Evidence of final, continuing insurance coverage complying with insurance requirements.

f. Consent of Surety to Final Payment.

B. Final Inspection:

1. Submit written request for final inspection for Project Acceptance.

2. Engineer will either proceed with the inspection or advise Contractor of unfulfilled requirements.

3. Engineer will prepare a final Certificate of Completion after satisfactory inspection of the Work.

1.05 FINAL APPLICATION FOR PAYMENT

A. Following a satisfactory Final Inspection and receipt of a final Certificate of Completion from the Engineer, Contractor shall submit the final Application for Payment in accordance with the procedures and requirements specified in Section 109 of the Division 1 General Requirements

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

SECTION 01785

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 GUARANTEE OF WORK

A. The Contractor hereby agrees to make, at its own expense, all repairs or replacements necessitated by defects in materials or workmanship, supplied under terms of this Contract, and pay for any damage to other works resulting from such defects, which becomes evident within one (1) year after the date of acceptance of the project or the Substantial Completion date whichever is applicable or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents. The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by subcontractors or manufacturers of packaged equipment components. The Contractor also agree to indemnify, defend, and hold the City of Albany harmless from liability of any kind arising from damage due to said defects.

B. Upon the receipt of notice in writing from the Owner, promptly make all repairs arising out of defective materials, workmanship, or equipment. The Owner is hereby authorized to make such repairs, and the Contractor and its Surety shall be liable for the cost thereof, if ten (10) days after giving of such notice to the Contractor, the Contractor has failed to make or undertake the repairs with due diligence. In case of emergency, where in the opinion of the Owner delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor, and the expense in connection therewith shall be charged to the Contractor, and its Surety shall be liable for the cost thereof.

C. Prior to the expiration of the Warranty period, the Owner reserves the right to hold a meeting and require the attendance of the Contractor. The purpose of the meeting is to review warranties, bonds and maintenance requirements and determine required repair or replacement of defective items.

D. For the purpose of this paragraph, acceptance of the Work or a portion of the Work by the Owner, shall not extinguish any covenant or agreement on the part of the Contractor to be performed or fulfilled under this Contract which has not, in fact, been performed or fulfilled at the time of such acceptance. All covenants and agreements shall continue to be binding on the Contractor until they have been fulfilled.

E. The Owner and the Contractor agree that warranty on the parts of the work possessed and used by the Owner in accordance with these Specifications, shall commence on the date that the Owner takes possession of such work and so notifies the Contractor in writing. The Owner and the Contractor further agree that such possession, and use of the work shall not be deemed as Substantial Completion or acceptance of any other part of the Work.

F. If, after installation, the operation or use of the materials or equipment furnished under this Contract proves to be unsatisfactory to the Engineer or Owner, the Owner shall have the right to operate and use such materials or equipment until it can, without damage to the Owner, be taken out of service for correction or replacement. Such period of use of the defective materials or equipment pending correction or replacement shall in no way decrease the guarantee period required for the acceptable corrected or replaced items of materials or equipment.

G. Nothing in this Section shall be construed to limit, relieve or release the Contractor's, subcontractor's and equipment supplier's liability to the Owner for damages sustained as the result of latent defects in the equipment furnished caused by the negligence of the supplier's agents, employees or subcontractors. Stated in another manner, the warranty contained in this Section shall not amount to nor shall it be deemed to be a waiver by the Owner of any rights or remedies (or time limits in which to enforce such rights or remedies) it may have against the supplier of the equipment to be furnished under these Specifications for defective workmanship or defective materials under the laws of this State pertaining to acts of negligence.

H. Execute and submit a completed, dated, and signed Warranty Form summarizing the agreement to the warranty requirements of this specification. The Warranty Form shall be submitted prior to the Substantial Completion date or the final acceptance of the project or within five (5) days of the occupancy or use of a portion of the Work, whichever is applicable.

END OF SECTION

SECTION 01890

RESTORATION OF IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Restoration of work areas after installation and construction of new facilities.

1.02 REFERENCES

A. References in this Section to the City of Albany Standard Construction Specifications means the current edition as published by the City of Albany.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 STRUCTURES

A. Take precautions to protect the integrity and usefulness of existing facilities.

B. If necessary, remove existing structures including curbs, gutters, pipelines, and utility poles, as necessary for the performance of the work.

1. Repair existing structures that are damaged as a result of the Work under this contract

2. Rebuild or replace the structures in as good a condition as originally found.

3.02 ROADS AND STREETS

A. Asphalt pavement that has been removed, broken, or damaged, or in which the ground has caved or settled during the work under this contract, shall be brought to original grade and section and resurfaced.

B. Before resurfacing material is placed, sawcut edges of pavement to provide clean solid vertical faces.

C. Complete pavement repair in accordance with City of Albany Standard Construction Specifications and in accordance with the requirements of the affected agencies and parties.

3.03 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Restore cultivated or planted areas and other surface improvements damaged by construction as nearly as possible to their original condition.

B. Repair existing guard posts, barricades, and fences that are damaged.

C. Replace damaged plantings with new plantings of the same type or as acceptable to the Owner.

3.04 PROTECTION OF EXISTING INSTALLATIONS

A. Immediately repair or replace existing equipment, controls, structures, or facilities which are damaged as part of the Work.

B. Take measures that are necessary to ensure that construction debris and materials are kept out of the wastewater system.

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Site preparation work, as follows:

1. Installing safety and protective barriers.

2. Constructing temporary access roads, work areas and storage areas, erecting temporary fences and erosion control devices, and other initial work required for CIPP operations.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 REFERENCES

A. References in this Section to the City of Albany Standard Construction Specifications means the January 2018 edition as published by the City of Albany.

1.04 (NOT USED)

1.05 SUBMITTALS

A. Comply with Section 01330.

B. Submit:

1. Materials used and layout of temporary fences.

2. Proposed staging locations.

1.06 FENCES

A. Erect temporary fences at the boundary of construction areas and in locations indicated on the Drawings to protect the public from entering work areas.

PART 2 - PRODUCTS

2.01 TEMPORARY CONSTRUCTION FENCES

A. Type: Heavyweight, high visibility, flat laminar mesh design.

B. Material: High-density polyethylene.

C. Height: 48 inches.

D. Posts: Wood or metal posts at 10-foot spacing. Secure fence to posts with plastic cable ties.

PART 3 - EXECUTION

3.01 (NOT USED)

3.02 SAFETY AND PROTECTIVE BARRIERS

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to Sections 202, 107.16.00, 107.20.00.

B. Along Public Roadways:

1. Comply with the City of Albany Standard Construction Specifications including, but not limited to Sections 202 and 107.16.00.

2. Install appropriate barriers such as temporary fencing, plastic drums, or concrete traffic barriers to protect public from construction areas and to protect workers and existing facilities from danger of passing vehicles.

C. Temporary Fences:

1. Prior to beginning excavation, erect temporary fences along boundaries of temporary easements and/or public areas adjacent to the work or access indicated on the Drawings.

2. Maintain work activities outside of the protected areas.

3. Remove temporary fences upon completion of work.

D. Existing Trees: Erect temporary fences around trees at the drip line that are adjacent to the Work and may be subject to damage unless protected. Maintain work activities outside of protected areas. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Sections 203.03.01A and 210.08.07C.

E. Provide protective concrete slabs, steel plates or encasements for existing buried facilities that may be damaged by Contractor's equipment and vehicles.

F. Provide protective aggregate base cover over valve vaults, manholes, concrete pads or other surface facilities that may be damaged by Contractor's equipment and vehicles.

3.03 PRIMARY SITE ACCESS, WORK AND STORAGE AREAS

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Sections 105.14.00, 107.16.00, 202.02.01.

B. Develop primary access routes, work areas and storage areas as indicated on the Drawings.

C. Clean up areas at the conclusion of the project and return the areas to their original or better condition.

3.04 TREE TRIMMING

A. Permits are required to prune, cut, break, or damage roots of street trees. Contractor maybe subject to fines if trees are removed prior to obtaining a permit and may also be required to remove, replace, and mitigate for the loss of a damaged tree. The Contractor is required to coordinate with the Owner for tree trimming services required for this project.

B. Per Section 203.03.01A of the City of Albany Standard Construction Specifications, cut and remove trees and branches only where approved by the City Engineer. When directed by the City Engineer, remove additional branches to provide a balanced appearance of any tree.

C. Timely Contractor communication with the Owner is required regarding activities that will require tree trimming:

1. At least two weeks before beginning work that requires tree trimming, attend a walk-through of the project area with the Owner, Engineer, and the City Forester. Identify trimming necessary to complete the Work. Notify the Engineer of additional tree trimming work that may be needed during the project.

2. Following Project completion, attend a final walk-through of the project area and identify any needed post-construction tree-related work.

3.05 REMOVAL OF EROSION CONTROL DEVICES

A. Remove all erosion control devices at the completion of work.

B. Straw wattles containing plastic netting, including plastic specified as phot-degradable, may not remain on site. Remove entire wattle or remove and dispose of plastic netting and spread straw from wattle across vegetated areas of site.

END OF SECTION

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SECTION 02245

SEWER FLOW CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Flow control of existing sewer flows is required for the method of rehabilitation specified.

B. To the extent possible, schedule work so all sewer flow control is performed during dry weather periods. Bypass pumping during rain storms will not be allowed.

C. Contractor may take advantage of upstream diversion opportunities for side sewers. Diversions will be allowed only for dry weather flows.

D. Coordinate with the Owner to utilize the City of Albany Sewer Lift Station and Forcemain to divert flow as indicated on the Drawings. Peak dry weather flows shown on the Drawings assume flows are diverted through the lift station where possible. It is anticipated the sewer lift station and forcemain will be operational by June 1, 2020.

E. Furnish, install and operate pumps, plugs, conduits, and other equipment to divert the flow of wastewater around the pipeline reach in which work is to be performed and to maintain service to all properties connected to the sewer being rehabilitated. Plugs shall be designed so all or any portion of the wastewater can be released. Plugs shall be provided with a tag line. The pumping system shall be of sufficient capacity to manage existing flows plus additional flow that may occur during a rain event. If pumping is required outside normal working hours, engines shall be equipped and/or shielded in a manner to keep noise to a minimum. Noise level shall conform to the requirements of the City of Albany unless otherwise approved by the Owner's Representative.

F. Bypass pumping shall be done in such a manner as will not damage private or public property or create a nuisance or public health menace. The pumped wastewater shall be in an enclosed hose or pipe that is adequately protected from traffic and shall be redirected into the sanitary sewer system. Dumping or free flow of wastewater on private property, gutters, trenches, streets, sidewalks, or into storm sewers is prohibited. The Contractor shall be liable for all damages associated with this work. After the work is completed, flow shall be restored to original conditions and temporary facilities removed.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section.

1. Section 01330 – Submittals
2. Section 01550 – Traffic Control

3. Section 01560 – Environmental Controls

1.03 SUBMITTALS

A. Provide the following submittals in accordance with Section 01330:

1. A bypass pumping plan for sewerage flow control in accordance with these Specifications. This plan shall be submitted for City approval within three (3) weeks of Notice to Proceed and shall include:

a. An overall bypass plan showing each bypass stage, suction & discharge locations, side sewer control, and anticipated order of operations. A schedule in a tabulated format that shows, by pipe segment number, all bypass equipment, set up dates, run duration and dismantling dates. This schedule shall be updated monthly.

b. Specific site plans for each bypass installation showing the size and layout of pumps, valves, and temporary pipelines. Layout shall show how temporary pumping facilities will be protected during use. Bypass equipment layout including all pipe holders, pipe ramps, vehicle and pedestrian ramps, shall be included in traffic control plans, see Section 01550.

c. Drawings indicating the location of temporary bulkheads, plugs, bypass discharge lines including diameter and size, discharge points and all locations where flow control pipelines will be buried, placed above grade, or protected with ramps and all provisions required to maintain access.

d. Methods of controlling trunk main and side sewer pipeline flow, including location where sewerage is to be diverted, type of pipe to be used for bypass.

e. List of manholes to be monitored as part of system check for sewer flow control system.

f. Methods for bypass pumping or controlling flow from laterals for the installation of cleanouts and during trunk lining.

g. Catalog data showing capacities of pumps and standby equipment.

h. Catalog data for portable generators when electric pumps are used.

i. Catalog data on pump controls and audible alarms.

j. Catalog data of temporary bulkheads.

k. Catalog data on pipe ramps, pipe holders, or other pipe materials proposed for protecting pipe from traffic.

l. Design calculations prepared by an Engineer licensed in the State of Oregon proving adequacies of the bypassing system and selected equipment.

m. The sewerage bypass pumping plan shall include an emergency response plan to be followed in the event of a failure of the bypass pumping system, or a sewage spill or leak.

2. The bypass pumping plan shall be reviewed by the City and the Owner's Representative prior to the start of construction of the bypass system.

1.04 SEWERAGE FLOW VOLUME

A. Estimated peak dry weather sewerage flow rates are provided on the Drawings.

B. It is the Contractor's responsibility to provide bypassing system adequate to bypass the dry weather peak flows plus additional flow that may occur during a rain event around the work site.

C. Diameters of side sewers connected laterals and associated volume of sewage flow is unknown. The Contractor shall control all possible sewage flow in side sewers and laterals around work site.

D. The City is not responsible for any deviations in quantity or quality of the sewerage flow at any time during the work.

PART 2 - MATERIALS

2.01 PRIMARY FLOW CONTROL PUMPS AND GENERATORS

A. Provide suitable "trash-type" primary sewerage pump capable of bypassing all flows around the worksite.

B. Keep generators fueled at all times.

2.02 SEWAGE FLOW CONTROL PIPING

A. The sewage flow control piping shall be completely leak free. Any drips or leaks shall be repaired by the Contractor immediately.

B. The use of leak-proof flexible hose for bypassing local sewers 12-inches in diameter and smaller may be allowed upon written permission from the Owner's Representative. Bypass lines for sewers 15" diameter and larger shall be fusion welded high-density polyethylene (HDPE).

C. A minimum of two pipes shall be provided for each bypassing set-up. For bypassing sewers 15-inches or larger, HDPE pipes shall be set up and connected to pumps with separate valving for instantaneous operation.

D. For bypassing sewers 15-inches or larger, flows through HDPE may be split between the two pipes.

E. The discharge velocity for bypass piping shall be no more than 12 feet per second

2.03 TEMPORARY BULKHEADS AND PLUGS

A. Design and provide bulkheads and plugs to withstand anticipated upstream differential head without leakage or displacement.

B. A watertight seal is required to prevent sewerage from entering the work area.

C. The Contractor shall provide double bulkheads and plugs, both able to withstand upstream head, upstream of locations where persons will be entering the sewer and

at all flow diversions. Coordinate installation and removal of bulkheads and plugs with the Owner.

2.04 STANDBY EQUIPMENT

A. The Contractor shall have, available on site, sufficient equipment and materials to ensure continuous and successful leak-free operation of the sewage flow control system.

B. A sufficient number of valves, tees, elbows, connections, tools, sewer bulkheads for different pipe sizes as needed, piping and other parts of system hardware to ensure immediate repair or modifications of any part of the system as necessary.

C. The Contractor shall have, on site, one standby pump with capacity equal to or greater than the largest primary pump. If any pump is electric, a standby generator shall be provided on site. For bypassing sewers 15-inches or larger, the standby pump shall be connected to HDPE discharge lines, shall be operational, and shall be connected to the bypass piping system to allow immediate standby service at all times.

D. Generator shall be fueled at all times.

E. If vacuum trucks are used as primary bypass control, one standby vacuum truck shall be onsite at all times

2.05 ENVIRONMENTAL PROTECTION

A. All bypass pumps and generators shall be placed on spill guards.

2.06 PIPE PROTECTION EQUIPMENT

A. Pipe ramps shall be suitable for the anticipated speed of traffic.

B. All pipe protection materials shall be rated for H20 loads.

C. Submit drawings of pipe ramp installations for review and approval by the City.

PART 3 - EXECUTION

3.01 MONITORING AND SUPERVISION OF SEWAGE FLOW CONTROL SYSTEM

A. Take all necessary precautions including constant monitoring (requires 24 hours per day, 7 days per week continuous monitoring by on-site Contractor personnel while sewage flow control system is in place) of sewage flow control pumping and diversion plug or bulkhead to ensure that there are no sewerage spills and no private properties are subjected to a sewerage backup. The person responsible for system monitoring shall have no other job or responsibility except for the monitoring and maintaining of the bypass system.

B. The Contractor shall not shut down sewage flow control systems between shifts, on holidays or weekends, or during work stoppages without written permission from the Owner.

C. Monitor manholes that will constitute flow control and diversion system check. The Contractor personnel responsible for monitoring the flow control and diversion shall inspect each manhole a minimum of once per 4 hours.

3.02 NOISE CONTROL

A. Minimize, to the extent possible, noise associated with the Work to meet noise requirements as specified in Section 01560.

B. All pumps, generators, and motors shall include integrated noise attenuation to 70 dBA at 30 feet.

C. Where equipment is located within 50 feet of noise receptor and will be operated outside of normal working hours, or at the request of the Owner, secondary noise attenuation shall be erected. Secondary sound attenuation (additional noise barriers), may include insulated plywood shields, sound curtains, or other sound baffling structures. Secondary sound attenuation shall enclose pumps and generators and shall be installed at no additional cost to the City. Secondary sound attenuation shall reduce the noise level to 54 dBA at 30 feet.

3.03 ODOR CONTROL

A. The Contractor is required to minimize, to the extent possible, odor associated with the Work. The Owner may request additional odor reducing measures if complaints about odor are received.

B. The Contractor is made aware that odor reducing measures requested by the City shall be provided at no additional cost to the City.

3.04 PEDESTRIAN AND VEHICULAR ACCESS

A. The flow control pumping system shall be adequately protected from traffic and shall be located to minimize disruption to vehicle and pedestrian traffic.

B. At locations where sewage flow control piping crosses driveway entrances, cross streets, or pedestrian crosswalks, the piping shall be placed in City approved roadway ramps. Separate ramps shall be provided for each direction of traffic and separate ramps shall be provided at each sidewalk. Contractor shall submit drawings for ramp installations with bypass pumping plans and traffic control plans to the City for review and approval.

C. All flow control piping on private property shall not interfere with parking, access, or movement of supplies and materials.

D. It is the Contractor's responsibility to contact, coordinate, and acquire written permission from the private property owner for use of private property for location of flow control piping. Provide signed agreements to the Owner and Owner's Representative prior to any work on the private property.

3.05 SEWAGE FLOW CONTROL AND DIVERSION

A. Pressure test the bypass system using potable water. Repair all visible leaks so pressure will hold within 1 psi after 30 minutes prior to commencement of the bypass run test.

B. Set up and test the sewage flow bypassing system for a minimum period of 6 hours (6 o'clock am to 12 o'clock pm on weekdays) or as directed by the Owner's

Representative, not more than 24-hours prior to removing the sewer from service for the start of the rehabilitation work. Correct any deficiencies in the system as required to provide a leak-free bypass that will not cause overflows, back-ups or spills as specified.

C. Provide continuous sewage flow control pumping and/or diversion of sewerage for acceptable completion of the sewer main line rehabilitation operations. Where bypassing is required, the sewerage shall be redirected from a minimum of one manhole upstream of the start of the alignment to be rehabilitated into the sanitary sewer system downstream of the work area.

D. The Contractor may divert and bypass local flows upstream of the sewer rehabilitation. The Contractor shall be responsible for the installation and maintenance of all flow diversions including bulkhead or plugs. Notify the Owner in writing 48 hours prior to installing bulkhead or plug and diverting flows and prior to removal of bulkhead or plug. After installation of bulkhead or plug, test the sewage diversion system for a period of 72 hours, or for a period as directed by the Owner or Owner's Representative, immediately prior to removing the sewer from service for the start of the rehabilitation work. Monitor the diversion and the bypass pipeline as specified. Correct any deficiencies in the system as required to provide a leak-free bypass that will not cause overflows, back-ups, or spills as specified.

E. The Contractor can discharge bypassed wastewater flow to other trunk sewers, but bypassed wastewater flows shall not be discharged to local sewers. It is the Contractor's responsibility to determine the allowable flows that can be discharged to the trunk sewers. The bypassed flows shall not cause overflows, deterioration or any adverse conditions on the existing system.

F. Dumping or free flow of sewerage on private property, gutters, streets, into storm sewer, creeks, or flood control channels is prohibited. Bypassing to receiving waters, the ground surface, or any circumstance that results in groundwater contamination or potential health hazards is prohibited.

G. The Contractor shall be liable for all clean up damages, and resultant fines in the event of a spill.

H. After the work is completed, all temporary connections and piping installed by Contractor shall be thoroughly flushed with clean water (prior to dismantling), removed, and all affected improvements shall be restored to original condition, or better, and flow shall be restored to normal.

END OF SECTION

SECTION 02531

MANHOLE ABANDONMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Abandonment of existing sanitary sewer manholes.

1.02 REFERENCED SPECIFICATIONS, CODES, AND STANDARDS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02245 – Sewage Flow Control
3. References in this Section to the City of Albany Standard Construction Specifications means the current edition as published by the City of Albany.

1.03 SUBMITTALS

A. Provide submittals in accordance with Section 01330.

B. Submit the following:

1. Pea Gravel gradation and source.

PART 2 - MATERIALS

2.01 BACKFILL

A. 3/8” Pea Gravel.

PART 3 - EXECUTION

3.01 SEWER FLOW CONTROL

A. Provide sewer flow control per Section 02245.

3.02 MANHOLE ABANDONMENT

A. Comply with the City of Albany Standard Construction Specifications.

B. Complete installation of CIPP pipe liner prior to start of manhole abandonment.

C. Remove Riser, Frame and Cover and return to the Owner.

D. Remove Manhole Cone.

E. Backfill remaining manhole structure with pea gravel and compact to 93% of the maximum dry density per modified proctor test method ASTM D1557.

F. Backfill with native soil from top of remaining structure to finished grade. Native backfill shall be compacted to a minimum density equal to 90 percent of the maximum dry density per modified proctor test method ASTM D1557.

3.03 TRENCH EXCAVATION AND BACKFILL

A. Trench safety requirements shall comply with the City of Albany Standard Construction Specifications and the latest revision of the Occupational Safety and Health Administration (OSHA) regulations governing the equipment and the application of the equipment to the particular work being undertaken.

3.04 BYPASS PUMPING

A. Bypass pumping requirements for sewage flow control are specified in Section 02245.

END OF SECTION

SECTION 02533

MANHOLE COATING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Rehabilitating concrete manholes for sanitary sewers.

1.02 REFERENCED SECTIONS

A. The following Section is referenced int his Section

1. Section 01330 – Submittals

1.03 SUBMITTALS

A. Provide submittals in accordance with Section 01330.

B. Submit, at minimum, the following:

1. Submit product technical data acknowledging that products meet requirements of standards referenced.

2. Submit shop Plans and catalog cuts for underlayment, filler compounds and epoxy top coat surfacing.

a. Include application equipment.

C. Data to be Submitted by Bidder with the Bid:

1. Statement of Experience Requirements (See Appendix B)

a. Complete form in its entirety. Failure to submit and meet the requirements outlined on the Statement of Experience forms for Manhole Coating and as listed below will be grounds for rejection of the bid. The form can be found in Appendix B.

2. Contractor:

a. The Contractor/Applicator must have a minimum of two (2) years of experience or three (3) projects applying the manufacturer's product.

3. Field Personnel:

a. The lead on-site personnel, including the superintendent and/or foreman as applicable, must have minimum supervisory field experience for manhole rehabilitation as specified herein of three (3) successfully completed projects.

4. Manufacturer:

a. The Manufacturer must have a minimum of five (5) years experience manufacturing products for rehabilitating manholes.

1.04 QUALITY ASSURANCE

A. Manufacturer: Shall have a minimum of 5 years' experience manufacturing products for rehabilitating manholes.

B. Contractor/Applicator: Shall have a minimum of 2 years' experience or 3 projects applying the manufacturer's product.

C. All materials must comply with local, state, and federal air quality requirements and restrictions.

D. Spark testing of rehabilitated manholes will be required. Successful spark testing (i.e. no pinholes/holidays) will be required for payment.

E. Coating product(s) shall be capable of being installed and curing properly within a manhole environment. Coating product(s) shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems; and, capable of adhering to the manhole structure substrates.

F. Repair product(s) shall be fully compatible with coating product(s) including ability to bond effectively forming a composite system.

G. Utilize equipment for the spray application of the coating product(s) which has been approved by the coating product manufacturer. Contractor shall have received training on the operation and maintenance of said equipment from the coating product manufacturer.

H. Contractor shall be trained by, or have their training approved and certified by, the coating product manufacturer for the handling, mixing, application and inspection of the coating product(s) to be used as specified herein.

I. Initiate and enforce quality control procedures consistent with the coating product(s) manufacturer recommendations and applicable NACE or SSPC standards as referenced herein.

J. Notify the Owner and Owner's representative if any steps are located in the manholes to be rehabilitated.

PART 2 - MATERIALS

2.01 EXISTING MATERIALS

A. Remove existing coatings prior to application of the coating product(s) which may affect the performance and adhesion of the coating product(s).

B. Thoroughly clean and prepare existing products to effect a seal with the coating product(s).

2.02 REPAIR AND RESURFACING PRODUCTS

A. Repair products shall be used to fill voids, and/or smooth transitions between components prior to the installation of the coating product(s). Repair materials must be compatible with the specified coating product(s) and shall be used and applied in accordance with the manufacturer's recommendations.

B. Resurfacing products shall be used to fill large voids, lost mortar in masonry structures, smooth deteriorated surfaces and rebuild severely deteriorated structures.

C. The following products may be accepted and approved as compatible repair and resurfacing products:

1. 100% solids, solvent-free epoxy grout specifically formulated for epoxy topcoating compatibility.

2. Factory blended, rapid setting, high early strength, fiber reinforced, non-shrink repair mortar with integral corrosion inhibitor that can be trowelled or pneumatically spray applied may be approved if specifically formulated to be suitable for topcoating with the specified coating product(s).

D. Manufacturer: Sauereisen, BASF MasterEmaco S 488CI

2.03 COATING PRODUCTS

A. Epoxy coating shall be an ultra-high-build, 100% solids epoxy coating specifically formulated and intended for such use and approved by the Engineer. Epoxy coating shall be Raven 405, products of RLS Solutions, Inc., www.rlssolutions.com; Neopoxy 5300 Series, products of Neopoxy International, www.neopoxy.com; or Quadex Structure Guard, a product of Quadex, Inc., www.quadexonline.com; no substitutions accepted.

B. Prior to application of the epoxy coating, a waterborne, low viscosity penetrating primer/sealer compatible with the approved epoxy coating shall be applied, if recommended by the epoxy manufacturer.

C. Strength: Compressive Strength: 18,000 psi (ASTM C579), Flexural Strength: 13,000 psi (ASTM C580).

PART 3 - EXECUTION

3.01 CLEANING AND SURFACE PREPARATION

A. Cleaning and preparation of interior manhole surfaces shall conform in all respects to the manhole coating manufacturer's recommendations. The cleaning methods or combination of methods, which shall include pressure washing, shall be chosen by the Contractor to remove oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants. The cleaning and surface preparation shall be performed in a manner that provides a uniform, sound, clean, neutralized surface suitable for manhole coating.

B. Concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation shall be removed so that only sound substrate remains.

C. Choice of surface preparation method(s) should be based upon the condition of the structure and concrete or masonry surface, potential contaminants present, access to perform work, and required cleanliness and profile of the prepared surface to receive the coating product(s).

D. Surface preparation method, or combination of methods, that may be used include high pressure water cleaning, high pressure water jetting, abrasive blasting, shotblasting, grinding, scarifying, detergent water cleaning, hot water blasting and others as described in NACE No. 6/SSPC SP-13. Whichever method(s) are used, they shall be performed in a manner that provides a uniform, sound clean neutralized surface suitable for the specified coating product(s).

E. Infiltration shall be stopped by using a material which is compatible with the repair products and is suitable for topcoating with the coating product(s).

F. The top of the manhole cone shall be a termination point of the specified coating product(s).

G. Debris from the cleaning and surface preparation shall be removed from the manhole and shall not be allowed to fall into flowing wastewater. Means such as the construction of a false bottom, or other means approved by the Owner or Owner's Representative, shall be used. Debris shall be disposed of as specified in Subsection 3.02, "Disposal of Material Removed from Sewers," of these Technical Specifications.

H. Any voids and depressions in the manhole wall shall be filled with a mortar or epoxy filler compound compatible with and approved by the manufacturer of the manhole coating that is to be applied. The Contractor shall submit documentation from the manhole coating manufacturer verifying that the epoxy filler compound is compatible with manhole coating.

3.02 DISPOSAL OF MATERIAL REMOVED FROM SEWERS

A. All material resulting from sewer cleaning operations on a particular work day shall be deposited in a water-tight container and removed from the site and disposed of on that same work day. The Contractor shall not allow such material to accumulate at the site of the work beyond a single work day.

B. The Contractor shall transport material removed from sewers in vehicles or equipment which completely contain the material, to minimize objectionable odor and prevent dripping, spilling, scattering, leaking, blowing or any other loss of transported material. Should loss of transported material occur due to any cause, the Contractor shall retrieve the material and clean up any areas contaminated by it to the satisfaction of the Owner or other authorities having jurisdiction. Transport vehicles shall not exceed maximum allowable load limits.

C. All material removed from sewers as a result of cleaning operations shall be removed from the site and shall be transported to and legally disposed of at a landfill facility suitably permitted to receive such waste. The landfill facility, and the disposal of material removed from sewers, shall conform to all applicable federal and state rules and regulations.

D. The Contractor shall research and obtain information on suitable landfill facilities, make all necessary contacts and arrangements for disposal of the material, and pay all related fees and expenses. Information related to material disposal at landfill sites not owned by the City will not be provided by the Engineer or other City personnel.

E. The material shall be sufficiently dewatered prior to weighing at the landfill as to be suitable for immediate disposal. The Contractor shall submit to the Engineer certified scale weigh tickets, including the name and location of the permitted facility used, to verify material disposal.

3.03 APPLICATION OF REPAIR AND RESURFACING PRODUCTS

A. Repair products shall be used to fill voids, and other surface defects which may affect the performance or adhesion of the coating product(s).

B. Resurfacing products shall be used to repair, smooth or rebuild surfaces with rough profiles to provide a concrete or masonry substrate suitable for the coating product(s) to be applied. These products shall be installed to minimum thickness as recommended within manufacturers published guidelines.

C. Repair and resurfacing products shall be handled, mixed, installed and cured in accordance with manufacturer guidelines.

D. All repaired or resurfaced surfaces shall be inspected for cleanliness and suitability to receive the coating product(s). Additional surface preparation may be required prior to coating application.

3.04 APPLICATION OF COATING PRODUCT(S)

A. Application procedures shall conform to the recommendations of the coating product(s) manufacturer, including environmental controls, product handling, mixing, application equipment and methods.

B. Spray equipment shall be specifically designed to accurately ratio and apply the coating product(s) and shall be in proper working order.

C. Prepared surfaces shall be coated by spray application of the coating product(s) described herein to a minimum wet film thickness of 125 mils. The coating shall be applied to all surfaces in the manhole, including the manhole flow channel, the bench, the barrel, and the cone.

D. Subsequent topcoating or additional coats of the coating product(s) shall occur within the product's recoat window. Additional surface preparation procedures will be required if this recoat window is exceeded.

E. Coating product(s) shall interface with adjoining construction materials throughout the manhole structure to effectively seal and protect concrete or masonry substrates from infiltration and attack by corrosive elements. Procedures and materials necessary to effect this interface shall be as recommended by the coating product(s) manufacturer.

F. Termination points of the coating product(s) shall be made at the top of the manhole cone. The manhole coating shall overlap a minimum of 6 inches onto any CIPP liners that enter the manhole.

3.05 TESTING AND INSPECTION

A. All costs associated with the following tests, including repeat tests as required, and all costs associated with related removal and replacement of manhole coating, shall be borne by the Contractor.

B. Measurement of Wet Film Thickness:

1. During application a wet film thickness gauge, meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used. Measurements shall be taken, documented and attested to by Contractor for submission to City in conformance with ASTM D4414.

2. Adhesion Testing:

   a. Each manhole coated shall be tested for adhesion/bond of the coating to the concrete substrate.

   b. Testing will be performed by a third party hired by the Contractor and approved by the Owner.

   c. The test will be performed in-place and in conformance with ASTM D7234 (Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers), using a loading fixture with a diameter of 20 mm.

   d. Each manhole will be tested in a minimum of two locations: one in the cone, and one in the barrel. The pull test shall meet or exceed 200 psi, and shall include substrate (concrete) attached to the back of the plug of removed material, and there shall be no visual signs of coating in the test hole.

   e. A pull test with results between 150 and 200 psi may be acceptable if more than 50% of the substrate in the test area is adhered to the dolly, at the discretion of the Engineer.

   f. If a test fails, then an additional test will be performed in the vicinity of the failed test. If the retest fails, then the Contractor shall remove and replace any and all loosely adhered or un-adhered liner as directed by the Engineer.

3. The Contractor shall assist in adhesion testing by providing the necessary tools, equipment, labor, adequate ventilation, ladders for access, and barricades or other traffic control devices to allow the third-party testing firm safe access to the work. The Contractor shall likewise provide all tools, equipment, materials, and labor necessary to comply with confined space entry requirements, and shall be responsible for opening and closing entrances and exits.

4. Adhesion testing is a destructive test, and after testing, the Contractor shall repair the test area. Repairs shall be made by abrading the surface of the adjacent manhole coating for a distance of a minimum of 1 inch around the test hole, thoroughly cleaning the surface, and hand applying manhole coating material to fill the test hole and overlap onto the adjacent manhole

coating. The thickness of the manhole coating applied at the repair shall be at least as thick as the thickness of the adjacent manhole coating. Repairs shall conform to the manhole coating manufacturer's recommendations.

C. Holiday Detection:

1. After the coating product(s) have set in accordance with manufacturer instructions, all surfaces shall be inspected for holidays with high-voltage holiday detection equipment. Reference NACE SP0188-2006 for performing holiday detection. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional coating can be hand applied to the repair area. Follow the coating manufacturer's recommendations for touch-up/repair procedures. Provide the City documentation on areas tested, results and repairs made.

D. Visual Inspection:

1. Visual inspection shall be made by the Owner or Owner's Representative. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Contractor at the Contractor's expense.

2. The Engineer may require photographs of portions of the manhole or the entire manhole, and the Contractor shall provide the photographs to the Engineer at no cost to the City.

END OF SECTION

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SECTION 02535

CURED-IN-PLACE PIPE (CIPP)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Rehabilitating the existing Riverfront Interceptor reinforced concrete sanitary sewer pipes as indicated on the Drawings. Rehabilitation shall be accomplished by the use of Cured-In-Place Pipe (CIPP).

B. The Contractor shall provide all materials, labor, equipment, services, and incidentals necessary to complete the work including but not limited to bypass pumping and/or diversion of sanitary sewer flows, cleaning and television inspection of pipe to be lined, liner installation, all quality controls, provision of samples for conformance testing, reestablishment and reconnection of service laterals, final television inspection, and all other related work.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS:

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02245 – Sewer Flow Control
3. Section 02645 – Chemical Grouting
4. Section 02956 – Cleaning and Television Inspection of Sanitary Sewer Mains

B. The following ASTM references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail. The latest edition of the following references shall be used:

ASTM F1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
ASTM F1743	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled-in-Place Installation of Cured-In-Place Thermosetting Resin Pipe (CIPP)
ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D543	Standard Practice for Evaluating the Resistance of Plastics to Chemical Reagents
ASTM D3567-97 (2002)	Standard Practice for Determining Dimensions of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings
ASTM D5813	Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe
ASTM D792	Standard Test Methods for Density and Specific Gravity of Plastics by displacement

ASTM F2019-03	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled-in-Place installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)
ASTM D2122-98 (2004)	Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
ASTM F2561-06	Standard Practice for Rehabilitation of a Sewer Service Lateral and its Connection to the Main Using a One-Piece Main and Lateral Cured-in-Place Liner
ASTM D2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
ASTM D3681	Standard Test Method for Chemical Resistance of "Fiberglass" (Glass Fiber Reinforced Thermosetting Resin) Pipe and Fittings

1.03 SUBMITTALS

A. Prepare and submit in accordance with Section 01330.

B. Data to be Submitted by Bidder with the Bid:

1. Statement of Experience Requirements (See Appendix B)

a. Complete form in its entirety. Failure to submit and meet the requirements outlined on the Statement of Experience forms for large diameter CIPP installation and as listed below will be grounds for rejection of the bid. The form can be found in Appendix B.

2. Contractor:

a. The Contractor must have minimum of three (3) years of continuous experience installing CIPP liners in pipe of a similar size, length, and configuration as contained in this contract.

3. Field Personnel:

a. The lead on-site personnel, including the superintendent and/or foreman as applicable, must have minimum supervisory field experience for cured-in-place pipe installation of three (3) successfully completed projects totaling a minimum of 5,000 lineal feet of 24-inch diameter and larger mainline.

4. CCTV Operator:

a. The CCTV operator must have a minimum of three (3) years experience in CCTV pipeline inspection and assessment as well as a valid NASSCO PACP certification. The CCTV software used must be NASSCO PACP compliant.

5. Licensed Installing Documentation

a. Failure to submit documentation meeting the following requirements will be grounds for rejection of the bid.

1) The Contractor shall be certified, authorized, or licensed by the manufacturer or licensor of the cured-in-place method that the Contractor will use or employ on this project.

2) The Contractor shall provide proof of the license or deliberation documentation to the Engineer to substantiate the above with his bid.

3) The Contractor shall defend, indemnify and hold harmless the City and the Engineer from and against any and all liability, loss, damage claims, suits, judgments, or costs arising, in whole or in part, from any allegation of patent infringement by the City or the Contractor on account of the use or employment of the cured-in-place pipe method on this project by the Contractor.

4) In the event that the method used or employed on this project is determined to infringe upon the patent rights of another, then the Contractor either shall secure for the City and Engineer approval or the method, as modified, so that the alleged patent infringement ceases, or pay any and all liability, loss, damage, claims, suits, judgments, or costs attributed to the use or employment of the infringing cured-in-place pipe method plus any costs incurred by the City and Engineer in connection therewith.

5) The unit price for cured-in-place pipe shall include the cost of any fees and royalties due to the patent holder of the cured-in-place pipe method.

C. Data to be Submitted After Notice of Award:

1. Unless otherwise noted in the following submittal descriptions, the following data is to be submitted after the Notice of Award and a minimum of one week prior to the preconstruction meeting. The Contractor shall not start work on site until all submittals are turned in.

2. Performance Work Statement (PWS): The Contractor shall submit a PWS that clearly defines the CIPP product is in conformance with the requirements of these Contract Documents. The PWS shall, at a minimum, contain the following: A detailed installation plan describing all preparation work, cleaning operations, pre-CCTV inspections, bypass pumping, traffic control, installation procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warrantees furnished, and further requirements as listed below.

3. Proposed CIPP Detailed Plan: Contractor shall submit a description of the proposed CIPP lining technology, including a detailed plan for identifying all active service connections, maintaining service during mainline installation for each home/business served by the segment of pipe being lined, including temporary service if required by the Contract.

4. Engineering Design Calculations: In accordance with the Appendix of ASTM F1216, engineering design calculations shall be submitted for each length of liner to be installed including the thickness of each proposed CIPP. It will be acceptable for the Contractor to submit a design for the most

severe line condition and apply that design to all of the line sections. These calculations shall be performed and certified by a qualified Professional Engineer registered in the State of Oregon. All calculations shall include data that conforms to the requirements of these specifications or has been pre-approved in writing by the Engineer.

5. Manufacturers Technology Data: Proposed manufacturers technology data shall be submitted for all CIPP products and all associated technologies to be furnished.

6. Tools and Equipment: Submittals for the proposed cured-in-place pipe shall include a description of all tools and equipment required for a complete installation as well as which tools and equipment will be redundant on the job site in the event of an equipment failure or breakdown. All equipment to be furnished for the project, including proposed back-up equipment, shall be clearly described. The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.

7. Removal of Pipeline Blockages: A detailed description of the Contractor's proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning process. The Contractor shall submit this promptly after CCTV Inspection and shall not begin work on any pipe segment that requires a removal of a blockage until the proposed procedure for that pipe segment is approved.

8. Public Notice: A detailed public notification plan shall be submitted that includes detailed staged notification to residences affected by the CIPP installation.

9. Odor Control Plan: A detailed odor control plan shall be submitted ensuring project specific odors will be minimized at the project site and surrounding areas.

10. Cured-in-Place Pipe Literature: The Contractor shall submit shop drawings, catalog data, manufacturer's technical data, dimensioned drawings, and installation details/sketches and other pertinent information for the cured-in-place pipe installation work. All materials provided shall be fully in accordance with the requirements of the reference specifications listed.

11. Project Schedule: The Contractor shall submit a schedule identifying proposed work hours and dates for each installation.

12. Affidavit of Compliance: The Contractor shall submit a certified affidavit of compliance for all cured-in-place pipe furnished confirming that the materials fully conform to the requirements specified herein.

13. Bypass Pumping Plan: The Contractor shall submit a bypass-pumping plan for review by the Engineer. The plan shall include proposed methods and equipment for sewage control in accordance with the Specifications. This submittal shall include methods of controlling main pipeline flow, including location where sewage is to be diverted, type of pipe to be used for bypass,

and the method of service lateral flow control. The plan shall include methods for employing standby equipment when required during an emergency, including the use of a second pumping unit on standby or two pumps alternating. Refer to Section 02245.

14. Thickness Calculations: The Contractor shall submit detailed calculations confirming the liner thickness for the proposed resin system. List all assumptions, design criteria, and material characteristics.

15. Resin Calculations: The Contractor shall submit calculations for the volume of resin to be used for each segment including the calculated amount of excess resin necessary to account for liner material properties, changes in the resin's physical and chemical characteristics due to polymerization and the structural condition of the sewer. The Contractor shall provide a log of the actual volume of resin used during installation.

16. Cured-in-Place Process: The Contractor shall provide a detailed description of the cured-in-place installation process, including the wet-out process, manhole preparation, existing pipe preparation and manufacturer's liner installation procedure. This description shall include tube and resin manufactures wet-out recommendations including the roller gap, material feed speed and vacuum requirements for each liner size and thickness. If wet out occurs off-site, provide certification by the person-in-charge that the entire wet out process including handling and delivery to the site followed the defined procedures.

17. Quality Control Plan (QCP): The Contractor shall submit a detailed quality control plan (QCP) that fully represents and conforms to the requirements of these specifications. At a minimum the QCP shall include:

    a. Detailed discussion of the proposed quality controls to be performed by the Contractor.

    b. Proposed procedures for quality control, product sampling and testing shall be defined and submitted as part of the plan. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form. The system manufacturer shall furnish a checklist containing key elements of the CIPP installation criteria that is important for the Engineer to ensure that quality control and testing requirements are performed in accordance with the Contract Documents.

18. Safety Plan: The Contractor shall submit a safety plan in conformance with Oregon and Federal OSHA and City standard operating procedures. At a minimum, the Safety Plan shall include:

    a. Identification of all confined spaces and location of all permit spaces.

    b. Procedure for issuing an entry permit.

c. Measures taken to prohibit unauthorized employees from entering permit spaces.

d. Evaluation of space hazards.

e. Location of each worker entry.

f. Entry procedures.

g. Plan and procedures for emergencies.

h. Ventilation of spaces.

i. Provisions for training employees about their roles.

j. The roles of entrants, attendants, entry supervisors, rescuers, and those who test or monitor the atmosphere in the space.

k. Instructions for identifying and evaluating hazards.

l. Methods for eliminating or controlling hazards.

m. Instructions for using and maintaining equipment.

n. Instructions for coordinating entry with another employer.

o. Procedures for concluding entry and canceling the entry permit.

p. All other written program requirements required by Oregon and Federal OSHA and City standard operating procedures.

1.04 MATERIALS

A. CIPP Liner Physical Properties: The cured resin/fabric tube CIPP system shall conform to the minimum structural standards defined in ASTM F1216 and ASTM F1743 and found in Table 1.

Table 1: CIPP Liner Physical Properties

Property	Test Method	Cured Composite Per ASTM F1216	Cured Composite Per Design
Flexural Modulus of Elasticity (Short Term) (Felt Tubes)	ASTM D790	250,000 psi	Contractor Value
Flexural Strength (Short Term) (Felt Tubes) Felt/Fiberglass as recommended by Manufacturer	ASTM D790	4,500 psi	Contractor Value

1.05 DESIGN PARAMETERS

A. The proposed CIPP liner shall be designed for the following parameters:

1. Service Life: Greater than 50 years

2. Pipe Conditions: Fully-deteriorated

3. Load Conditions: Continuous

4. Soil: 135-pounds/cubic foot

5. Height of Water:

   a. Groundwater to finished grade where pipe segment is outside of the 100-year floodplain

   b. 100-year water surface elevation where pipe segment is within the 100-year floodplain if the water surface elevation is higher than the highest ground surface elevation for the pipe. Otherwise, use a water height equal to finished grade.

6. Pipe Ovality: 2% or as measured by field inspection

7. Modulus of Soil Reaction: 1,000 psi

8. Long-term Flexural Strength: 50% of initial (ASTM D790)

9. Modulus of Elasticity: 50% of initial (ASTM D790)

10. Enhancement Factor (K): 7

11. Maximum Deflection: 5%

12. Minimum Factor of Safety: 2.0

13. Resin Migration Allowance: 10% maximum

14. Creep Retention Factor: 50%

B. The liner shall have sufficient wall thickness to withstand all anticipated internal and external pressures and loads that may be imposed after installation. The design of the CIPP shall include considerations for ring bending, deflection, combined loading buckling and ovality. A Professional Engineer licensed by the State of Oregon shall check and approve the liner design calculations. Calculations shall be submitted to the Engineer for approval prior to fabrication of the tube.

C. Hydraulic Capacity:

1. The overall hydraulic capacity shall, at a minimum, be maintained after installation of the CIPP. The installed CIPP shall, at a minimum, be equal to the full flow capacity of the original pipe before rehabilitation. In those cases where full capacity cannot be achieved after liner installation, submit a request to waive this requirement, together with the reasons for the waiver request. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

D. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties above or greater values if substantiated by independent lab testing and in accordance with the design equations in Appendix X1 of ASTM F1216, and the above design parameters.

1.06 WARRANTY

A. Contractor shall provide a warranty to be in force and effect for a period of one year from the date of written final acceptance.

B. The warranty shall require the repair or replacement of the liner due to failure resulting from faulty materials or installation as deemed necessary by the Owner.

C. All required work incidental or required as part of the repair or replacement shall be provided by the Contractor at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to gouging, abrasion, flattening, cutting, puncturing, or ultra-violet (UV) degradation. On-site storage locations shall be approved by the Engineer. All damaged materials shall be promptly removed from the project site at the Contractor's expense and disposed of in accordance with all current applicable agency regulations.

2.02 FABRIC TUBE

A. The fabric tube shall consist of one or more layers of absorbent, non-woven felt fabric, felt/fiberglass or fiberglass and meet the requirements of ASTM F1216, ASTM F1743, ASTM D5813 and ASTM F2019. The fabric tube shall be capable of absorbing and carrying resins, construction to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments and stretch to fit irregular pipe sections. Submit certified information from the felt manufacturer on the nominal void volume in the felt fabric that will be filled with resin.

B. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation, pressures will meet or exceed the design thickness after cure.

C. The fabric tube shall be manufactured to a size and length that, when installed, will tightly fit the internal circumference and length of the original pipe, meeting applicable ASTM standards or better. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin to ensure the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering liner to ensure that the liner can be installed in a tight-fitted condition.

D. The outside and/or inside layer of the fabric tube (before inversion/pull-in as applicable) shall be coated with an impermeable, flexible membrane that will

contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet out) procedure.

E. No material shall be included in the fabric tube that may cause de-lamination in the CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between tube fabric and the activated resin containing a colorant. Colorant shall be green unless otherwise approved by the Engineer.

F. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin saturated felt fabric and dry or resin-lean areas.

G. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.

H. The outside of the fabric tube shall be marked every 5 feet with the name of the manufacturer or CIPP system, manufacturing lot, and production footage.

I. The minimum length of the fabric tube shall be determined by the installer and shall effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.

J. The nominal fabric tube wall thickness shall be constructed, as minimum, to the nearest 0.5mm increment, rounded up from the design thickness for that section of installed CIPP. Wall thickness transitions, in 0.5mm increments or greater as appropriate, may be fabricated into the fabric tube between installation entrance and exit access points. The quantity of resin used in the impregnation shall be sufficient to fill all of the voids in the tube material at nominal thickness and diameter. The volume of resin should be increased in accordance with ASTM F126 and/or ASTM F1743 as applicable to allow for the change in resin volume due to polymerization, thermal expansion, or migration.

2.03 RESIN

A. The resin shall be a corrosion-resistant polyester or vinyl-ester resin and catalyst system or epoxy and hardener system that when properly cured within the tube composite meets the requirements of ASTM F1216, ASTM F1743 or F2019, the physical properties herein, and those that are to be utilized in the design of the CIPP for this project.

B. The resin shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

2.04 HYDROPHILIC END SEALS

A. Full-circle hydrophilic compression seals shall be properly sized according to the segment of the pipe to be lined. Product shall be Insignia™ End Seal Sleeve by LMK Technologies or approved equal.

PART 3 - EXECUTION

3.01 PREPARATORY WORK

A. Provide temporary sewerage flow control of the sanitary mains in accordance with Section 02245.

B. Thoroughly clean the host pipe in accordance with Section 02956.

C. Diameter and Length Verification: Verify internal diameter and length of existing sewer pipe prior to sizing and ordering liner.

D. Preliminary CCTV Inspection of Sewer Lines: Perform internal CCTV inspection after cleaning of the sewer lines to document the condition of the host pipe, identify and locate any active service laterals, and verify the lines were cleaned in accordance with Section 02956 and the liner manufacturer's requirements.

E. Spot Repairs:

1. Determine if spot repairs are required prior to proper installation of liner as required by lining manufacturer.

2. It shall be the Contractor's responsibility to remove all debris and to repair protruding laterals at no additional cost to the Owner.

3. Written notification shall be provided to the Owner and Owner's Representative a minimum of three days prior to all repairs that require excavation, such as collapsed pipe.

4. The Owner's Representative shall provide written approval prior to work that requires excavation.

3.02 INSTALLATION

A. General:

1. Installation methods for pulled-in-place CIPP shall meet the requirements of ASTM F1743.

2. Installation methods for CIPP installed by inversion shall meet the requirements of ASTM F126.

B. Wet Out

1. Thoroughly saturate flexible tube prior to installation. Catalyst system or additives compatible with the resin and flexible tube shall be as recommended by the manufacturer.

2. The fabric tube should be run through a set of rollers separated by a space, calibrated under controlled conditions to ensure proper distribution of resin.

3. Handle the resin impregnated flexible tube to retard or prevent resin setting until it is ready for insertion.

C. Insertion

1. The wet-out tube shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the tube as a result of installation. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extended to the next manhole or termination point.

2. Prior to installation, and as recommended by the manufacturer, remote temperate gauges or sensors shall be placed inside the host pipe to monitor the temperatures during the cure cycle. Liner and/or host pipe interface temperate shall be monitored and logged during curing of the liner.

3. To monitor the temperature of the liner wall and to verify correct curing temperature, sensors shall be placed between the host pipe and the liner in the bottom of the host pipe (invert) throughout its length to monitor the temperature on the outside of the liner during the curing process. The temperature sensors shall be placed where significant heat sinks are likely or anticipated. The sensors must be monitored by the computer using a tamper proof database that is capable of recording temperatures at the interface of the liner and the host pipe.

4. The addition of water, air, or steam pressure shall be adjusted to cause the impregnated flexible tube to invert from manhole to manhole, holding the tube tight against the host sewer pipe.

D. Curing

1. Curing shall be accomplished by utilizing the appropriate medium in accordance with the manufacturer's recommended cure schedule. The curing source or in and output temperatures shall be monitored and logged during the cure cycles, if applicable. The manufacturer's recommended cure method and schedule shall be used for each line segment installed, and the liner wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity or soil, per ASTM as applicable, shall be taken into account by the Contractor.

2. For heat cured liners, if any temperature sensors do not reach the temperature as specified by the manufacturer to achieve proper curing and cooling, the installer can make necessary adjustments to comply with the manufacturer's recommendations. The system computer should have an output report that specifically identifies each installed sensor station in the length of the pipe, indicate the maximum temperature achieved and the sustained temperature time. Each sensor should record both the maximum temperature and the minimum cool down temperature and comply with the manufacturer's recommendations.

3. For UV Cured Liners, all light train sensor reading, recorded by the tamper proof computer, shall provide output documenting the cure along the entire length of the installed liner. The cure procedure shall be in accordance with

the manufacturer's recommendation as included in the PWS submission by the Contractor.

E. Cool Down

1. Cool the CIPP in accordance with the manufacturer's instructions and in accordance with ASTM standards. Do not release internal pressure in a way that can create vacuum and damage the CIPP.

F. Finished Pipe

1. The finished CIPP shall be continuous over the entire length of the sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, lifts, delamination, and wrinkles larger than 2 percent of the diameter. The CIPP shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the lined pipe. If these conditions are present, remove and replace the CIPP at the Contractor's expense.

2. Any defect, which will or could affect the structural integrity or strength of the linings, shall be repaired at the Contractor's expense in accordance with the procedures as detailed in these Specifications.

3. The ends of the CIPP shall be sealed to the existing host pipe. The sealing material shall be Insignia™ End Seal Sleeve by LMK Technologies or approved equal.

4. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacturer of the CIPP system.

5. If the CIPP does not fit tightly against the original pipe at its termination point(s), the space between the pipes should be sealed by filling with a resin mixture compatible with the CIPP.

3.03 CONNECTION TO MANHOLES

A. The CIPP shall make a tight seal at the manhole opening with no annular gaps.

B. Seal shall be a hydrophilic seal compatible with installed CIPP, applied at the manhole/wall interface in accordance with the CIPP system manufacturer's recommendation.

C. The sealing material shall be Insignia™ End Seal Sleeve by LMK Technologies or approved equal.

3.04 ACTIVE LATERALS

A. Existing services shall be internally reconnected unless otherwise indicated in the Contract Documents and as shown on the Drawings.

B. Reconnection of existing services shall be made after the CIPP has been fully installed, fully cured, and cooled down. It is the Contractor's responsibility to make sure that all active service connections are reconnected.

C. A CCTV camera and cutting tool shall be used for internal reconnections. The CIPP opening shall not be more than 100 percent of the service connection opening. The edges of all openings shall not have pipe fragments that may obstruct flow or snag debris. In all cases, the invert of the sewer connection shall be cut flush with the invert entering the mainline.

D. The annular gap at the reinstated lateral connection shall be sealed by chemical grout in accordance with Section 02645.

E. In the event that service reinstatements result in openings that are greater than 100 percent of the service connection opening, the Contractor shall install a CIPP T-liner type repair or other approved repair proposal. Additional compensation will not be made when a T-liner or other approved repair is required.

F. Coupons of pipe material resulting from service tap cutting shall be collected at the next downstream manhole of the pipe rehabilitation operation prior to leaving the site. Coupons may not be allowed to pass through the system.

3.05 TEMPORARY SEWAGE BYPASS

A. Unless specified otherwise in the Contract Documents, the work specified in this section includes all costs for labor, materials, accessories, equipment, and tools for performing all operations required to bypass pump sewage around a manhole or sewer section in which work is to be performed. This work shall be consistent with the temporary sewage bypass guidelines as stated in Section 02245.

3.06 TESTING

A. Verify the physical properties of the installed CIPP through field sampling and laboratory testing.

1. All materials for testing shall be furnished by the Contractor to the Engineer for testing.

2. All material testing shall be performed at the Owner's expense by an independent third-party laboratory selected by the Engineer as recommended by the CIPP manufacturer.

3. All tests shall be in accordance with applicable ASTM test methods to confirm compliance with the requirements specified in these Contract Documents.

B. A sample of cured liner from the testing above shall be subject to delamination tests by aggressively prying and separation into layers with a knife or sharp-edged instrument. No separation shall be possible. Results shall be included in the report above.

C. Provide samples for testing to the Engineer from the actual installed CIPP liner.

1. Samples shall be provided, at a minimum from one location per 1000 linear feet of CIPP installed or as required by the Contract Documents.

2. The samples shall be cut from a section of cured CIPP that has been inverted or pulled through a like diameter pipe that has been held in place by a suitable heat sink, such as sandbags.

3. All curing, cutting, and identification of samples will be witnessed by the Engineer and transmitted by the Engineer to the testing laboratory.

D. On pipelines greater than 18 inches in diameter, the Engineer may, at his/her discretion, require plate samples cured with the CIPP or designate a location in the newly installed CIPP where the Contractor shall take a sample.

1. The sample shall be taken by core drilling 2-inch diameter test plugs at random locations selected by the Engineer.

2. The opening produced from the sample shall be repaired in accordance with manufacturer's recommended procedures. As an alternative, the Contractor may use industry proven, non-destructive methods for confirming the thickness of the installed CIPP.

E. The laboratory results shall identify the test sample location as referenced to the nearest manhole and station. Final payment for the project shall be withheld pending receipt and approval of the test results. If properties tested do not meet the minimum physical and thickness requirements, the CIPP shall be repaired or replaced by the Contractor unless the actual physical properties and the thickness of the sample tested meet the design requirements as required in the Contract. The liner thickness shall have a tolerance of minus 5 percent plus 10 percent.

F. The CIPP system installed shall meet the chemical resistance requirements of ASTM D5813. CIPP samples tested shall be of fabric tube and the specific resin proposed for actual construction. It is required that CIPP samples without plastic coating meet these chemical testing requirements. A certification may be submitted by the Contractor from the manufacturer verifying that the chemical resistance of the CIPP meets the Contract requirements.

G. All costs to the Contractor associated with providing cured CIPP samples for testing shall be considered incidental to the work. Payment for all testing by a laboratory will be paid for by the City directly to the laboratory.

3.07 FINAL ACCEPTANCE

A. All CIPP sample testing and repairs to the installed CIPP as applicable shall be completed before final acceptance, meeting the requirements of these specifications, and documented in written form.

B. Perform a detailed closed-circuit television inspection in accordance with ASTM standards. All CCTV inspections shall be performed by a certified and trained PACP operator, using NASSCO compliant software.

C. Post-lining CCTV inspection shall be completed after installation of the CIPP liner and reconnection of the side sewers. A radial view (pan and tilt) TV camera shall be used. The finished liner shall be continuous over the entire length of the installation and shall be free of significant visual defects, damage, deflection, holes,

leaks, infiltration, and other defects. Unedited digital documentation of the inspection shall be provided to the Engineer within ten (10) working days of the liner installation. The data shall note the inspection date, location of all reconnected service laterals, debris, as well as any other defects in the liner. Immediately prior to conducting the closed circuit television inspection, the Contractor shall thoroughly clean the newly installed liner, removing all debris and build-up that may have accumulated.

D. Bypass pumping or plugging from the upstream manhole shall be utilized to minimize sewage from entering the line during the inspection. In the case of bellies in the line, the pipe shall be cleared of any standing water to provide continuous visibility during the inspection.

END OF SECTION

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SECTION 02645

CHEMICAL GROUTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Grouting pipe joints and lateral connections using the packer injection-method. Packer injection grouting, accomplished by pressure injection of chemical grout into the soils encompassing the exterior pipe joint or lateral connection.

B. Chemical grouts shall be injected into the soil surrounding the pipe and shall be designed to stabilize the soil and form a permanent impermeable grout/soil ring in the annular space between liners and host pipes. The Contractor shall provide all materials, labor, equipment, services, and incidentals necessary to complete the work including but not limited to bypass pumping and/or diversion of sanitary and stormwater flows, cleaning and television inspection of pipe to be grouted, all quality controls, final television inspection, and all other related work.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section:

1. Section 02245 – Sewer Flow Control

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS.

A. The following ASTM references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail. The last edition of the following references shall be used:

1. ASTM F2304 – Standard Practice for Rehabilitation of Sewers using Chemical Grouting (latest version)

2. ASTM F2454 – Standard Practice for Sealing Lateral Connections and lines from the Mainline Sewer Systems by Lateral Packer Method, Using Chemical Grouting (latest version)

1.04 CONTRACTOR SUBMITTALS

A. Submit the following data after the Notice of Award and a minimum of one week prior to the preconstruction meeting. The Contractor shall not start chemical grout work until all submittals are submitted and approved.

1. Performance Work Statement (PWS):

a. Submit a PWS that clearly defines the chemical grout product is in conformance with the requirements of these Contract Documents. The PWS shall, at a minimum, contain the following:

1) a detailed installation plan describing all preparation work, cleaning operations,
2) pre-CCTV inspections,
3) bypass pumping,
4) traffic control,
5) installation and equipment operating procedures,
6) quality control,
7) final CCTV inspection,
8) warrantees furnished,
9) and further requirements as listed below.

a) Chemical Grout Information: Contractor shall submit a description of the proposed chemical grout materials to be used including manufacturer's recommended procedures for storing, mixing, testing and handling of chemical grouts. Descriptions of any proposed additives to the chemical grout shall also be provided by the Contractor.

b) Packer Information: Contractor shall submit a description of the packer equipment to be used on the project including its model and manufacturer information.

2. Project Schedule:

a. Submit a schedule identifying proposed work hours and dates for work on each sewer or storm pipe segment.

3. Proof of Certification:

a. Submit a training certification from the grout manufacturer/supplier stating that the personnel working with the chemical grouts and additives have completed the required training to handle and mix the specified materials.

4. Bypass Pumping Plan:

a. The plan shall include proposed methods and equipment for sewage control in accordance with Section 02245.

b. Submittal shall include methods of controlling main pipeline flow, including location where sewage is to be diverted, type of pipe to be used for bypass, and the method of service lateral flow control.

c. The plan shall include methods for employing standby equipment when required during an emergency, including the use of a second pumping unit on standby or two pumps alternating.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Grouting equipment shall consist of the packer, appropriate pumping and hosing systems capable of supplying an uninterrupted flow of sealing materials to completely fill the voids.

B. Grout pumping system shall be sized to deliver a mixed volume of grout at a minimum of 3 gallons per minute and 30 gallons of uninterrupted flow within 10 minutes.

C. Volume of mixed grout pumped must be capable of being measured and recorded for each grouted joint/connection.

D. Provide back-up bladders for each packer on-site at all times during grouting procedures.

E. Equipment for cleaning lateral blockages shall be readily available while any lateral grouting work is being performed.

2.02 GROUTS:

A. Handle, and store grout in accordance with the manufacturer's recommendations. The materials shall be delivered to the site in unopened original manufacturer's containers. All grouting materials shall have the following characteristics;

1. While being injected, the grout shall be able to react/perform in the presence of water (groundwater) and tolerate some dilution during the injection process.

2. The ability to increase grout mix viscosity, density and gel strength by increased concentration of constituents or the use of approved additives.

3. The cured grout shall withstand submergence in water without degradation.

4. The grout shall not be biodegradable.

5. A minimum of 10% acrylamide base material by weight in the total grout mix.

6. The cured grout shall be chemically stable and resistant to organics found in sewage.

7. The grout shall have a controllable reaction time between 10 seconds and 1 hour.

8. Water based chemical grouts shall have a viscosity of 2 centipoise. Acrylate base grouts shall have a viscosity between 1 and 3 centipoise.

9. The resultant grout formation shall be a homogeneous, chemically stable, firm, flexible gel prevents the passage of water (infiltration) through the pipe joint or lateral connection.

10. Residual grout shall be easily removable from the sewer line to prevent blockage of the sewage flow.

11. Acceptable water based chemical grouts are Avanti AV-100, Avanti AV-118, or approved equal.

12. Acceptable acrylate-based grouts are DeNeef AC-400, DeNeef Gelacryl SR, Avanti AV-160, or approved equal.

2.03 ADDITIVES:

A. With Engineer approval, the Contractor may use additives to increase the performance of the chemical grouts. The additives shall be selected and used as recommended by the manufacturer. When using non soluble additives, the grout tanks must have mechanical mixing devices to keep the additives in suspension and maintain a uniform solution of grout additive.

B. Strengthening Agents:

1. For joint grouting, a latex or "diatomaceous earth" additive may be added to increase compressive tensile strength. The quantity of strengthening agent additive shall be as recommended by the manufacturer and approved by the Engineer.

2. Acceptable strengthening agents are Avanti AV-257 lcoset, DeNeef Reinforcing Agent, or approved equal.

C. Root Inhibitor:

1. When roots are present, a root deterrent chemical shall be added to control root growth. The quantity of inhibitor shall be as recommended by the manufacturer and approved by the Engineer.

2. Acceptable root inhibitor is Avanti AC-50W or approved equal.

D. Dye:

1. A manufacturer approved water soluble dye without trace metals may be added to the grout tank(s) for visual confirmation.

E. Gel Time Modifier:

1. A gel time extending agent may be used in accordance with the manufacturer's recommendations to extend gel time as necessary to perform the work.

2. Approval from the Engineer is required to use the gel time modifier.

PART 3 - INSTALLATION

3.01 PREPARATION:

A. Pipe Cleaning:

1. Prior to the application of the chemical grouting materials, thoroughly clean the sewer designated to receive the chemical grouting. Cleaning shall constitute removal of all loose debris and solids, which inhibit proper

seating of the packer. If mineral deposits or protruding taps are present, they shall be removed ahead of grouting activities.

2. Remove all roots and loose debris from pipe joints and lateral connections prior to lining activities.

B. Lateral Connection Sealing from the Mainline by Packer Injection Grouting:

1. Follow the manufacturer's recommendations for grout mixing and safe handling procedures.

2. During the grouting process, the grouting technician shall monitor the grout component tanks to make sure that proper ratios are being pumped.

3. Grout all joints and lateral connections called out on the Drawing using the packer injection method. The grout shall be forced through a system of pumps and hoses into and through the joints of the sewer from the packer within the sewer pipe.

4. Pumping Grout

a. Operate the pumps until the mixed grout has flowed through any joint failure, through any annular space, and into the surrounding soil; gelled or filled the available void space; formed a cohesive seal stopping further grout flow; and minimum of 8 psi back pressure is achieved while pumping.

b. As grout pumping continues, the void pressure will slowly rise to a range of approximately 2 to 4 psi. Continue pumping until a point where there is a sudden increase in the void pressure.

c. If the grout pumped exceeds 1 gallon per foot of lateral bladder plus 3 gallons, it will be suspected that there are significant voids on the outside of the pipe or that the packer is not properly sealed.

d. Verify that the packer is sealed properly. If sealed properly, modify the grouting procedure to stage grouting by pumping additional grout equivalent to 1 gallon plus 0.25 gallon per foot of lateral bladder, waiting 1 full minute, and retesting.

e. The maximum number of stages shall not exceed two stages unless authorized by Engineer.

5. Confirm lateral flow after sealing of each lateral connection. If a grout blockage exists, immediately clear the lateral at no additional cost to the City. Blockages in the lateral that are not the result of grouting operations shall not be the responsibility of the Contractor.

6. Remove excess grout from pipe and laterals. Excess grout shall be defined as a thickness of grout that given its location, size, and geometry could cause blockage. Flush excess grout to the next downstream manhole, then remove grout from the sewer system and properly disposed of it.

3.02 TEMPORARY SEWAGE BYPASS

A. Unless specified otherwise in the Contract Documents, the work specified in this Section includes all costs for labor, materials, accessories, equipment, and tools for performing all operations required to bypass pump sewage around a manhole or sewer section in which work is to be performed. This work shall be consistent with the temporary sewage bypass guidelines as stated in Section 02245.

3.03 FINAL ACCEPTANCE AND QUALITY CONTROL

A. The City will conduct a wet-weather warranty CCTV inspection of the mainline sewers that contain joint or lateral grouting. The inspection will be conducted during the 1-year warranty period. Any joints or lateral connections originally sealed by the Contractor that are observed to be leaking shall be re-sealed at no cost to the City. After the Contractor has been notified of such leakage, the Contractor shall have 60 calendar days to re-seal the noted connections.

END OF SECTION

SECTION 02950

SITE RESTORATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The restoration of features and includes restoration of surface features damaged during the course of execution of this contract to be restored as part of this work. The work may include such repairs as manhole appurtenances, pavement, sidewalk, curb, gutters, fencing, landscape, vegetation, grass, and plants.

B. Unless otherwise specified, restore all public and private property impacted by construction shall be restored to original condition or better.

C. Restrict operations to cause the least amount of damage to surrounding property and do not damage off-site features or adjacent vegetation.

D. The Contractor shall be held responsible for any damage to existing structures, features, materials, or equipment due to the work in this contract. Repair or replace any damaged structures, features, materials or equipment to the satisfaction of the property owner.

E. Notify Construction Manager immediately if accidental damage occurs.

1. Ensure that adjacent roads are maintained and clear of soil and/or other debris at all times during the construction period.

2. Before making any changes or modifications to this plan, obtain approval from the Construction Manager.

1.02 REFERENCED SECTIONS

A. The following Sections are reference in this Section:

1. Section 01330 – Submittals

1.03 REFERENCES

A. References in this Section to the City of Albany Standard Construction Specifications means the current edition as published by the City of Albany.

1.04 SUBMITTALS

A. Comply with Section 01330.

B. At minimum, submit the following:

1. Methods, materials, and equipment to be used at each site requiring restoration.

PART 2 - (NOT USED)

PART 3 - EXECUTION

3.01 MANHOLE CONE, FRAME, AND COVER

A. If the manhole cone, frame, and cover are damaged during construction, contractor shall replace in accordance with the City of Albany Standard Construction Specifications.

3.02 PAVEMENT RESTORATION

A. Asphalt pavement that has been removed, broken, or damaged, or in which the ground has caved or settled during the work under this contract, shall be brought to original grade and section and resurfaced.

B. Before resurfacing material is replaced, sawcut edges of pavement to provide clean solid vertical faces.

C. Any areas deemed unsafe by the Construction Manager shall be immediately temporarily repaired by the Contractor at no cost to the Owner.

D. Complete pavement repair in accordance with City of Albany Standard Construction Specifications and in accordance with the requirements of the affected agencies and parties.

3.03 CLEANING PAVED SURFACES AND APPURTENANCES

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 209.02.04.

3.04 SITE RESTORATION

A. Unless indicated otherwise on the Drawings, restore the Site to the topography that existed prior to construction by excavation, compaction, finish grading and other earthwork operations, as necessary, for the areas affected by construction.

B. Backfill with stockpiled topsoil in all areas where the original topsoil was removed as part of the site preparation and construction activities.

C. Restore all drainage swales and water courses to their original alignments and grades.

3.05 RESTORING MOBILIZATION, BORROW, AND DISPOSAL AREAS

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 209.02.05.

3.06 PROTECTION OF EXISTING INSTALLATIONS

A. Immediately repair or replace existing equipment, controls, structures, or facilities which are damaged as part of the Work.

B. Take measures that are necessary to ensure that construction debris and materials are kept out of the wastewater system.

3.07 FENCES

A. Maintain all existing fences affected by the work until completion of the work.

1. If fences interfere with construction operations, relocate or dismantle them for the period of the construction at that particular property; replace after demobilization of equipment.

2. If any fences are weakened or destroyed by construction activity, reconstruct them at no cost to the owner.

B. Provide temporary fencing for protection of property where fencing is dismantled or modified for construction.

3.08 TREES AND PLANTS

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 209.02.01.

B. Protect trees and plants not removed against injury from the construction operations.

C. If irrigation systems are damaged or modified during construction, repair or replace in kind to the satisfaction of the Construction Manager.

D. Disturbed grass areas shall be seeded. Grass see will be provided by the City of Albany Parks and Maintenance department.

3.09 CURB, GUTTER AND SIDEWALK

A. Restore concrete in accordance with the City of Albany Standard Construction Specifications

B. Repair curb, gutter and sidewalks by removing and replacing the entire portions between joints or scores.

3.10 DRAINS

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 209.02.03.

3.11 OTHER SITE FEATURES

A. All other site features either damaged or destroyed during the execution of this contract shall be repaired or replaced to the satisfaction of the Construction Manager to the installation specifications of the manufacturer of the approved replacement item.

3.12 WARRANTY

A. Comply with the City of Albany Standard Construction Specifications including, but not limited to, Section 107.15.

END OF SECTION

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SECTION 02956

CLEANING AND TELEVISION INSPECTION OF SANITARY SEWER MAINS

PART 1 - GENERAL

1.01 SUMMARY

A. Closed Circuit Television (CCTV) inspection is required at the following phases of the work to:

1. Document the existing condition of the host pipe.
2. Verify pipe diameter, length, grade and bends.
3. Determine if spot repairs are required.
4. Insure that the pipeline is properly cleaned just after any required spot repairs and immediately prior to installing the liner.
5. Ensure proper liner installation.
6. Ensure proper lateral reinstatement.
7. Verify size and location of all lateral connections.

B. Prior to each television inspection, all sewage flow shall be bypassed from the pipeline sections to be cleaned and inspected, and the sewer shall be thoroughly cleaned as required by these specifications.

C. Prior to entering access areas such as manholes, and performing inspection or cleaning operations, an evaluation of the atmosphere to determine the presence of toxic or flammable vapors or lack of oxygen must be undertaken in accordance with local, state, or federal safety regulations.

D. This section is intended to provide the Contractor with general guidelines. It is the Contractor's responsibility to supply all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the Plans, but which are incidental and necessary to complete the specified work.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02245 – Sewer Flow Control

1.03 SUBMITTALS

A. Provide the following submittals as specified in Section 01330:

1. Written documentation for arrangements of legal disposal of all liquids and materials removed from pipelines and manholes during cleaning.

2. Weight tickets for hauling and disposing of hazardous material.

3. Submit description of cleaning equipment and methods.

4. Submit description at CCTV inspection equipment, sample CCTV inspection logs, and recordings (CD or DVD).

5. Provide to the Construction Manager pre-installation and post-installation video recording and suitable log for each sewer line. All video inspection shall utilize CD or DVD for documentation. Unedited video recordings and a suitable log of the inspection shall be provided to the Construction Manager five working days prior to lining (pre-installation) and within three working days after the liner installation (post-installation). If post-installation inspection recordings are not submitted within three working days of the liner installation, the Construction Manager may, at their discretion, suspend any further installation of liner until the post-installation recordings are submitted. As a result of this suspension, no additional working days will be added to the contract, nor will any adjustment be made for increase in cost.

6. Pre-installation inspection log: Submitted with each pre-installation video recording. The log shall identify the sewer line by manhole numbers, street location, and plan sheet number. The log shall include:

   a. The cleaning and inspection dates.

   b. Location and alignment length.

   c. Location of all laterals.

   d. Pipeline sags: length and depth

   e. Documentation and detailed description of defects and any repairs necessary prior to lining including distance from nearest manhole and conformance to cleaning requirements.

7. Post-installation inspection log: Submitted with each post-installation video recording. The log shall identify the sewer line by manhole numbers, street location, and plan sheet number. The log shall include:

   a. The inspection dates.

   b. Location and alignment length.

   c. Location and description of all debris in the lined sewer.

   d. Defects in the liner, including, but not limited to, gouges, cracks, bumps, wrinkles, or bulges.

   e. Location and inspection of lateral reinstatements, and connection to manholes.

1.04 PREVIOUS INSPECTION VIDEO RECORDINGS

A. Video recordings of the sewers to be lined are available for viewing. The Owner makes no express or implied guarantee as to the accuracy or the completeness of the information contained on the video recordings. The Contractor must make their

own judgment as to the condition of the sewers and the quantity of cleaning necessary and must not rely on the description provided on the video recordings.

1.05 EXPERIENCE REQUIREMENT

A. A minimum of three (3) experience in CCTV pipeline inspection and assessment as well as a valid NASSCO PACP certification. The CCTV software used must be NASSCO PACP compliant.

PART 2 - MATERIALS

2.01 CCTV CAMERA

A. Shall be 360 degree radial view, color image camera capable of rotating to look directly up tee and wye connections.

B. Shall be intrinsically safe and shall be operative in 100 percent humid conditions.

C. Lighting intensity shall be remotely controlled and shall be adjusted to minimize reflective glare.

D. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the sewer.

2.02 CAMERA ACCESSORIES

A. Camera shall be mounted on a truck such that the lens is located at the spring line of the sewer being televised.

B. Lighting equipment shall be properly sized for the pipe diameter being televised.

C. Recordings that are determined by the Construction Manager to be too dark shall be re-televised with better lighting.

2.03 RECORDING

A. High quality color CD or DVD.

B. Audio portions shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report. The Contractor shall give oral commentary on pipeline location, MH numbers, direction of inspection, and at all structural features including, but not limited to, defects, debris build-up, lateral connections, and all features as directed by the Construction Manager.

C. The footage counter shall be accurate to one foot per each pipeline segment for measurements of distance traveled by camera within the pipeline.

D. The camera advancement through the pipeline shall be at a speed that allows a clear picture of the pipeline and allows for thorough investigation of all structural features of the pipeline. The speed shall be adjusted based on direction from the Construction Manager.

PART 3 - EXECUTION

3.01 CLEANING OF EXISTING HOST PIPE

A. Prior to entering access areas such as manholes, and performing inspection or cleaning operations, an evaluation of the atmosphere to determine the presence of toxic or flammable vapors or lack of oxygen must be undertaken in accordance with local, state, or federal safety regulations.

B. Prior to conducting closed circuit television inspection, it shall be the responsibility of the Contractor to bypass sewer flows around the work and to thoroughly clean the host pipe. The word 'clean' in this specification is defined as the removal of all accumulations including sludge, dirt, sand, rocks, asphalt, concrete, grease, roots, and any other solid or semisolid material in the pipe down to the parent material with 100 percent debris removal.

C. It will be the Contractor's responsibility to make as many cleaning passes as necessary to meet the above definition of "clean". Acceptance of the cleaning, as determined by the Construction Manager, shall be based upon the subsequent video inspection of the sewer and the lining manufacturer's cleaning requirements.

D. Tree and plant roots shall be removed from within the sewers. Special attention should be used during the cleaning operation to assure removal of roots from the joints and laterals. Procedures may include the use of mechanical equipment such as rodding machines, root cutters, porcupines, and high-velocity jet cleaners.

E. Water Usage: The City will supply the water required for the Project from approved hydrant locations with a hydrant meter and appropriate backflow prevention device. Coordinate with the City.

F. Cleaning Equipment: Sewer line cleaning shall be performed with high-velocity jet equipment. When using a high-velocity jet machine, it shall not remain stationary while cleaning the sewer line. Selection of equipment shall be based on field condition such as access to manholes, quantity of debris, size of sewer, and pipe lining activities. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes. During sewer cleaning operations, precautions shall be taken by the Contractor in the use of cleaning equipment to avoid any damage to the pipe.

G. Removal and Disposal of Material:

1. Sludge, dirt, sand, rocks, grease, and other solids or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing materials to downstream sewer reaches is not permitted.

2. Trucks hauling solids or semi-solids from the site shall be watertight so that no leakage or spillage will occur. Transport vehicles shall not exceed maximum allowable load limits. Under no circumstances shall sewage or solids be dumped onto the ground surface, streets, in the sewer system, catch basins, or within storm drains.

3. Material removed from the sewers during the cleaning operation shall be deposited in a water-tight container and disposed legally by the Contractor at a landfill. All debris and containers shall be removed from the right-of-way at the end of each work day. The Contractor shall dispose of removed materials at the City of Albany Water Reclamation Facility at 330 NE Waverly Drive as directed by the Engineer.

4. It is the Contractor's responsibility to determine the quantity of debris and solids to be removed during cleaning. Video recordings of a previous sewer inspection will be made available for the Contractor to examine. The tapes are for information only and the Owner does not guarantee the accuracy of the information provided.

3.02 CCTV INSPECTION OF PRE AND POST-INSTALLATION SEWERS

A. Perform television inspection immediately after cleaning of the host and lined sewers to document the condition of the host sewer or liner, identify active laterals, identify any potential obstructions, to provide quality assurance of the liner installation, and to verify the lines were cleaned. Inspect the lines by using a 360 degree radial view color image camera capable of rotating to look directly up tees and wyes.

B. Video inspection shall be done on one sewer section at a time. CCTV inspection shall be performed after sewage flow diversion and control pumping is started.

C. Sewage flow control pumping shall be conducted from the upstream manhole in accordance with Section 02245.

D. The Contractor shall be responsible for cleanup, repair and property damage costs and claims should the Contractor's operation cause any backups or overflows. The Contractor shall also reimburse the Owner the full cost of any and all fines the Owner is required to pay as a result of a backup or overflow.

E. The Contractor is responsible for any damage to the sewer or service connections.

F. Should the camera get stuck in the sewer, the Contractor shall be responsible for all costs in extracting it. Costs related to difficulties encountered during internal video inspection are incidental to the contract, and claims will not be considered.

G. Inspection shall be performed in the presence of the Construction Manager by experienced personnel trained in locating breaks, obstacles, defects and side sewers by closed circuit television.

H. Note the locations of side sewers, protruding service taps, collapsed or crushed pipe, reductions in cross sectional area of more than 40% and obstructions which may prevent proper installation of the pipe liner into the pipelines. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, notify the Owner and Owner's Representative.

I. Inspections, the inspection report, and CCTV data shall be provided as NASSCO compliant export files and shall be easily transferable to the City's asset management system.

END OF SECTION