METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

Camargo Canyon Pump Station Elimination
INVITATION TO BID 273C909399
Volume Two

Project ID 10270026
Accession No. 79125 - 79135

SOLICITATION SCHEDULE (UNLESS AMENDED)

Bid Issued	**October 8, 2026**
Pre-Bid Meeting:	*n/a*
Questions Due:	**Thursday, Oct. 29, 2026, at 12:00 PM EST**
Bid Due:	**Tuesday, Nov. 10, 2026, at 12:00 PM EST**

Questions or requests for additional information regarding this solicitation shall be directed in writing to the assigned City of Cincinnati Buyer, Joshua Tucker, via email at joshua.tucker@cincinnati-oh.gov.
Starting on the date a procurement solicitation is issued and expiring on the date the contract is awarded, actual and prospective respondents or bidders (including their representatives or persons acting on their behalf) are prohibited from contacting any City employees other than the assigned Buyer or a representative from the City's Office of Procurement, in any manner regarding this solicitation. Any contact other than with the assigned Buyer or the City's Office of Procurement during the no contact period may be justification for rejection of the violator's bid.

******ELECTRONIC BIDS ONLY****** *This bid is designated as an electronic bid.* ***The bid will NOT be read publicly. No hard copies of bids will be accepted.*** *Bidders must submit bids electronically through the City's Vendor Self Service website. Bidders must be registered to submit a bid. Bidders can register, find instructions and submit bids at: https://vss.cincinnati-oh.gov/vssprod/Advantage4*

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SECTION 01 11 00

SUMMARY OF PROJECT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project – Work covered by all Contract Documents

B. Part 1 – General Construction

C. Contract Milestones and other General Provisions

1.02 PROJECT – WORK COVERED BY ALL CONTRACT DOCUMENTS

A. Work of the Project includes construction of approximately 795 linear feet of sanitary gravity sewer and the demolition of the existing Camargo Canyon Pump Station. The Work shall be performed for the CITY in accordance with the Contract Documents. The Work includes, but is not limited to, demolition, removal, replacement, installation of new equipment and/or modifications to existing equipment to the following areas and processes: the demolition of air release valve manholes, the abandonment of the existing Camargo Canyon Pump Station force main, the abandonment of the 8” gravity sewer to the pump station, the demolition of the existing pump station to 3’ below grade, the restoration of the existing lift station site, the installation of new gravity sewer and manholes.

B. GENERAL CONSTRUCTION – BIDDING PART 1

C. The work to be performed under Bidding Part 1 of this section shall include all necessary demolition, the furnishing of all materials, equipment and tools; and performing all necessary labor and supervision, for the complete construction of the General Construction Work and all other work appurtenant thereto, as described in Divisions 1 through 48 of these Specifications except as called for under other parts of the Work described herein.

D. Test borings that were drilled for this project have been indicated on the plans.

1.03 REFERENCE SPECIFICATIONS/GENERAL

A. To the extent the technical specifications in the Contract Documents reference the State of Ohio, Department of Transportation, Construction and Material Specifications (the "ODOT Specifications"), the Work shall be performed in accordance with the requirements of the applicable ODOT Specifications, unless the applicable ODOT Specifications are modified by the City of Cincinnati, Supplement to the State of Ohio, Department of Transportation, Construction and Material Specifications (the "City Supplement"). If the ODOT Specifications are modified by the City Supplement, the Work shall be performed in accordance with the City Supplement. Division 00 of the Contract Documents replaces Section 100 of ODOT Specifications. Finally, to the extent that either the ODOT Specifications or the City Supplement is inconsistent with the

Contract Documents, the Work shall be performed in accordance with the Contract Documents.

1.04 SEQUENCE OF WORK

A. The CONTRACTOR shall schedule the Work to conform to the general construction sequencing requirements described in Section 01 12 16.

1.05 CONTRACTOR'S USE OF SITE

A. The CONTRACTOR shall locate field offices, store materials and equipment and confine his construction activities to areas so indicated on the Drawings or as directed by the CITY. The CONTRACTOR shall also comply with all applicable Special Right-of-Way provisions in Section 01 14 00.

1.06 CONSTRUCTION PROCEDURE

A. It shall be the CONTRACTOR's responsibility during the construction of the Project to work equipment around poles, trees, or other obstructions which permit the passage of the bucket and boom but prevent passage of other portions of the equipment and, if necessary, to excavate from both sides of the poles, trees, or other obstruction, and to remove materials by hand labor, tunneling, or by other means, all at no additional cost to the CITY.

1.07 REQUESTS FOR SUPPLEMENTARY INFORMATION

A. It shall be the responsibility of the CONTRACTOR to make timely requests of the CITY for any additional information not already in the CONTRACTOR's possession and which should be furnished by the CITY under the terms of the Contract Documents, and which will be required in the planning and execution of the work. Such requests may be submitted from time to time as the need approaches, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

B. Each request shall be in writing, and list the various items and the latest day by which each will be required by the CONTRACTOR. The first list shall be submitted within two (2) weeks after contract award and shall be as complete as possible at that time. The CONTRACTOR shall, if required, furnish promptly any assistance and information the CITY may require in responding to these requests of the CONTRACTOR. The CONTRACTOR shall be fully responsible for any delay in work, or to the work of others, arising from failure to comply with the provisions of this section.

1.08 PERMITS

A. The CONTRACTOR shall be responsible to obtain and incur the cost of all required permits unless otherwise noted, including but not limited to, a cut/fill permit, and any permit required for local governments.

B. The CITY will be responsible for obtaining the Permit to Install,Street Opening Permit, and Railroad Right of Entry Permit.

C. Although the CITY may obtain and incur the cost of a permit, the CONTRACTOR shall comply with provisions of all permits and make any necessary submittals as detailed in Section 01 14 00.

D. All CONTRACTORS and Subcontractors of any tier, shall comply with all applicable standards, orders, regulations and permits, including but not limited to the Clean Water Act of 1970 (42 U.S.C. 1857, et seq.), the Federal Water Pollution Control Act (33 U.S.C. 1251, et seq.) as amended, Permits to Install, and NPDES 401 and 404 Permit requirements.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 11 00

SECTION 01 12 16

CONSTRUCTION SEQUENCE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Site Conditions.

B. Construction Constraints.

C. Suggested Construction Sequence.

1.02 SITE CONDITIONS

A. At the discretion of the CITY, the CITY will videotape the construction limits along the proposed alignment or work areas as detailed on the plans, within the Right-of-Way or easements, as well as potentially impacted properties adjacent to the work zone. The videotape will document pre-construction (existing) and/or post construction conditions. The CONTRACTOR shall make himself available at the project site during the videotaping, when requested by the CITY.

1.03 CONSTRUCTION CONSTRAINTS

A. The following is a list of constraints to consider in developing the overall plan of construction. This list is not intended to release the CONTRACTOR from the responsibility to coordinate the Work in any manner which will ensure Project completion within the time allowed.

1. Work, and access to the site via Camargo Canyon Road shall be performed in such a way that disruptions to residents is minimized.

1.04 SUGGESTED CONSTRUCTION SEQUENCE

A. Before starting any work, the CONTRACTOR shall attend a Pre-Construction Meeting with the CITY, as detailed in Section 01 31 19. The CONTRACTOR will be notified of the date and the time of the meeting, and shall submit a construction schedule meeting the requirements of 01 32 16.

B. The following areas are not necessarily listed in their required sequence of construction. A suggested sequence within each area, where necessary, is included. This sequence is not intended to release the CONTRACTOR from the responsibility to coordinate the Work in any manner which will ensure Project completion within the time allowed or as shown on the Project Documents. The CONTRACTOR is ultimately responsible for the sequence and execution of Work.

1. Verify invert elevations at existing manholes and determine if any adjustments are needed to the design.
2. Construct all necessary sediment and erosion control devices.
3. Clear and grub project site as necessary, limited to the work that will occur within the next 3 months.
4. Setup up de-watering system to start excavation.
5. Setup up by-pass pumping system to construct proposed sewer and manholes.
6. Construct proposed sewer and manholes.
7. Test sewers and manholes according to MSDGC standards.
8. Connect existing sewer to the proposed sewer.
9. Seal and abandon existing sewers at Camargo Canyon Pump Station
10. Demolish the existing Camargo Canyon Pump Station per plans.
11. Perform all necessary restoration.
12. Perform all site cleanup and cleaning.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 12 16

SECTION 01 14 00

CONTROL OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Use of Premises.

C. Hamilton County Street Opening Permit

D. Easements.

E. Special Conditions for Easements.

F. Pipe and Channel Locations.

G. Lines and Grades.

H. Construction Layout.

I. Construction Layout – Supplement – Contingency Item Only.

J. Protection of Trees.

K. Open Excavations.

L. Maintenance of Traffic.

M. Care and Protection of Property.p

N. Protection and Relocation of Existing Structures and Utilities.

O. Water for Construction Purposes.

P. Dust Control.

Q. Pollution Control.

R. Maintenance of Flow.

S. Cooperation within this Contract.

T. Cleanup and Disposal of Excess Material.

U. Noise Control

V. Stormwater Pollution Prevention Plan; SWPPP, NOI & NOT

W. Mitigative Measures

X. Erosion Control Plan

Y. CSX Railroad Construction and Insurance Requirements

Z. Indiana & Ohio Railway Construction and Insurance Requirements

1.02 SCOPE

A. The CONTRACTOR shall furnish plant facilities and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the Time for Completion required by the Contract Documents. If at any time such plant facilities and equipment appears to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the CITY may order the CONTRACTOR to increase the efficiency, change the character or increase the plant facilities equipment and the CONTRACTOR shall conform to such order at no cost to the CITY. Failure of the CITY to give such order shall in no way relieve the CONTRACTOR of his obligations to secure the quality of the work and rate of progress required by the Contract Documents.

1.03 USE OF PREMISES

A. The CONTRACTOR shall not trespass upon or in any way disturb property outside the street right-of-way, or outside the limits of construction, without first obtaining written permission from the property owner to do so. A copy of such written permission shall be furnished to the CITY.

B. If the CONTRACTOR finds it necessary to obtain additional working area, it shall be the CONTRACTOR’s responsibility for its acquisition. All requirements listed under the "Use of Premises" shall apply if additional area is obtained.

C. The CONTRACTOR shall, at no additional cost to the CITY, restore such property to the full satisfaction of the property owner, and shall obtain from the property owner a written release stating that restoration has been satisfactorily made. A copy of the written release shall be furnished to the CITY.

D. The CONTRACTOR shall not waste any excess earth, stone, or other excavated material on any property without first obtaining written permission from the owner of the property. Along with written approval from the property owner, the CONTRACTOR shall apply, pay, and obtain all required permits, including cut and fill permits, and secure the approval of the CITY. One copy of the property owner's written permission stating that the work has been completed satisfactorily, and one copy of any necessary permits shall be furnished to the CITY. Materials deposited off-site without the required approvals may be ordered removed and properly disposed of without additional compensation.

E. All items within the construction limits and the street right-of-way shall be removed, or removed and replaced, or restored as required by the Contract Documents, including the Drawings and Specifications and as directed by the CITY.

1.04 HAMILTON COUNTY STREET OPENING PERMIT

A. MSD will obtain the Street Opening Permit, but as a condition of that permit, the CONTRACTOR shall be required to comply and make any necessary submittals.

B. For cuts deeper than four feet below the surface, the CONTRACTOR shall supply details of bracing to be installed to protect the excavation. In those instances where cuts will be deeper than eight feet, the CONTRACTOR shall submit calculations prepared and sealed by a Professional Engineer registered to practice in the State of Ohio and experienced in designs of this type. Calculations and/or details shall be submitted to MSD, and MSD will forward the calculations and/or details to the Hamilton County Engineer for acceptance prior to the start of any construction activities. The design shall be sufficient for worker protection and to prevent structural failure of the road excavation during construction, to the satisfaction of the Hamilton County Engineer.

C. Any delay in obtaining the Hamilton County Engineer approval of bracing details shall not be reason to extend the construction time. All costs to prepare and coordinate the bracing detail approval, including additional soil borings as deemed necessary by the CONTRACTOR'S Engineer shall be included in various contract items.

D. Plans accepted by the Hamilton County Engineer, as well as bracing details and calculations, shall be available at the construction site at all times.

1.05 EASEMENTS

A. All permanent and temporary easements have been acquired for this Project and are designated on the drawings as "Construction Limits" or "Limits of Construction" for work outside of the public Right-of-Way. Copies of signed easement drawings and agreements are on file at the Department of Sewers, 1035 Woodrow Street, Cincinnati, OH 45204.

B. When a sewer lateral or appurtenance, such as a cleanout, is proposed directly on a public Right-of-Way line, the CITY will attempt to acquire a "Permission to Enter Upon Property" from the property owner. If the CITY is successful in acquiring a "Permission to Enter Upon

Property," the CITY will notify the CONTRACTOR by providing a copy of the executed "Permission to Enter Upon Property" allowing the CONTRACTOR to enter upon that property for the sole purpose of installing a sewer lateral and/or appurtenance. If the CITY is not successful in acquiring a "Permission to Enter Upon Property", the CONTRACTOR shall install the sewer lateral and/or appurtenance as close to the Right-of-Way line as feasible and as directed by the CITY, without entering upon private property.

1.06 SPECIAL CONDITIONS FOR EASEMENTS

A. Special conditions for private easements are located in Appendix A to this section.

B. Railroad requirements can be located in the following documents:

1. The latest version of the CSX Public Project Manual.

1.07 PIPE AND CHANNEL LOCATIONS

A. The CONTRACTOR shall locate pipelines and channels substantially as indicated in the Contract Documents. The CITY reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the CONTRACTOR's convenience and does not relieve him from laying and jointing different or additional items where required.

1.08 LINES AND GRADES

A. All Work shall be done to the lines, grades, and elevations indicated on the Drawings.

B. The CITY will perform all necessary construction layout. It is the CONTRACTOR'S responsibility to give the CITY sufficient notice of the times and places he wishes to do Work, in order to minimize inconvenience and delay to the Contractor. No time extensions will be granted for failing to give the CITY a reasonable amount of time to perform layout.

C. CONTRACTOR shall remove and reconstruct Work which is improperly located.

1.09 PROTECTION OF TREES

A. Two days prior to clearing and grubbing, the construction limits shall be marked and the CONTRACTOR shall walk the project with the CITY personnel to locate trees to be saved and trees to be removed.

B. The CONTRACTOR shall take extra measures to protect trees designated to be saved, such as erecting barricades, trimming to prevent damage from construction equipment, and installing pipe and other Work by means of hand excavation or tunneling methods. Such trees shall not be endangered by stockpiling excavatematerial or storing equipment within the dripline of the tree, which would be cause for contractor removal of tree.

C. The CONTRACTOR shall take precautions to avoid any unnecessary damage to trees. Branches which overhang the construction limits, and which interfere with the operation of equipment shall be tied back to avoid damage, if possible. Where injury to branches is unavoidable, the branches shall be sawed off neatly at the trunk or main branch. Any trees damaged beyond saving as solely determined by the CITY shall be removed by the CONTRACTOR at no additional cost to the CITY, and in the case of trees located on private property, the CONTRACTOR shall make restitution to the property owner.

D. If any digging is done within a distance of seven times the tree diameter, that tree (including stump) will need to be removed by a certified arborist. If the CONTRACTOR needs a tree removed, the CONTRACTOR shall give the CITY at least 3 working days notice so that the CITY can contact Davey Tree Expert Company at (513) 575-1733 and schedule the tree and stump removal. Tree and stump removal is paid directly to Davey Tree Expert Company by the CITY and will not be measured for payment to the CONTRACTOR. Any delays caused by the failure of the CONTRACTOR to meet these requirements are considered incidental to the contract and will not be measured for payment or a reason to extend construction time.

1.10 OPEN EXCAVATIONS

A. The CONTRACTOR shall adequately safeguard all open excavations by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Remove bridges provided for access during construction when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the CITY or the authority having jurisdiction of any rights-of-way being occupied by the construction. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the CITY may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. The CONTRACTOR shall take precautions to prevent injury to the public due to open trenches. Provide adequate light at all trenches, excavated material, equipment, or other obstacles which could be dangerous to the public at night.

1.11 MAINTENANCE OF TRAFFIC

A. Submit a Maintenance of Traffic Plan 14 days prior to the start of construction. The contractor will also submit a site access plan 14 days prior to the start of construction. The Maintenance of Traffic Plan is subject to review prior to implementation. Include a drawing accurately depicting the alignment of the roadway, and indicating all traffic control devices and their alignment, (north direction arrow, street names, travel direction, sign spacing, signs wording, device placement, lane widths, barricades, lights pavement markings, etc. The Contractor shall submit the Maintenance of Traffic Plan including a letter, signature, or email indicating approval from the municipality with jurisdiction to the CITY.

B. The CONTRACTOR shall be responsible for maintaining “local” traffic at all times and for

notifying the proper authorities regarding the closing of roads.

C. CONTRACTOR shall perform the required work with the least inconvenience and maximum safety of the CONTRACTOR and the traveling public. Any variance from these Maintenance of Traffic notes must be approved in advance, in writing, by the CITY.

D. The CONTRACTOR shall not begin work until standard barricades, warning signs are in acceptable position and the markers, and signs conform to the "Ohio Manual of Uniform Traffic Control Devices for Streets and Highways." The cost of all traffic control devices, including replacing existing striping damaged due to construction, shall be included in the various contract items.

E. The CONTRACTOR shall maintain local traffic at all times during construction of the Project in a manner causing the least amount of inconvenience to the abutting property owners. Temporary Driveways, Temporary Roadways, or Turn-Arounds as may be necessary to provide vehicular access to and from the abutting properties shall be constructed, maintained and subsequently removed by the CONTRACTOR, as directed by the CITY.

F. When excavating in the street pavement, the portion of the street pavement not in the sewer main construction shall be kept clear of all excavated material. Only a portion of the trench shall be excavated at a time and closed again with Controlled Low Strength Material (CLSM) density backfill, before the pavement over the balance is removed, as directed by the CITY.

G. All pavement and/or right-of-way openings within the public right-of-way must conform with the technical requirements of the current edition of the State of Ohio, Department of Transportation, Construction and Material Specifications, with supplements or changes thereto. In addition, the CONTRACTOR assumes all responsibilities and liabilities regarding strict adherence to applicable sections for the Maintenance of Traffic and Public Safety as set forth in the "Ohio Manual of Uniform Traffic Control Devices for Streets and Highways." All traffic control devices must be in place prior to starting construction.

H. The CONTRACTOR shall indemnify the CITY of Cincinnati, the Board of County Commissioners of Hamilton County, the Metropolitan Sewer District and all their representatives in accordance with the requirements of the Contract Documents, including Paragraph 6.20 of the General Conditions.

I. Police, Fire and School Bus access shall be maintained at all times. If at any time traffic has to be blocked, the CONTRACTOR shall notify the local Police District, Fire Division, and School District Transportation Office.

J. The CONTRACTOR shall make arrangements and pay for the services of an off-duty police officer and cruiser, as needed or as required by the jurisdictional agency.

1. On Camargo Road, during the hours of 7 a.m. to 9 a.m., 4 p.m. to 6 p.m., Mon. thru Fri., and all non-working hours, the entire road shall be open and available for traffic. During all working hours, one 12' lane shall remain open in each direction when possible. When two 12' lanes cannot be maintained, adjustment of the lane width can be made and

monitored by the contractor and inspector for safety. If for safety reasons, safe passage of traffic can not be maintained in two lanes, a flagger operation (per O.M.U.T.C.D. standards) must be in place to alternate traffic around the work site using one lane.

2. The cost of the maintenance of traffic shall be included in the various contract items.

1.12 CARE AND PROTECTION OF PROPERTY

A. The CONTRACTOR will be responsible for the preservation of all public and private property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the CONTRACTOR, restore such property to a condition similar or equal to that existing before the damage was done, or make good on the damage in other manners acceptable to the CITY.

B. Where CONTRACTOR contemplates removal of small structures such as mailboxes, signposts, fencing, guardrails, and culverts that interfere with CONTRACTOR's operations, the CONTRACTOR shall obtain approval of property owner and the CITY. Move mailboxes to temporary locations accessible to postal service. Replace items removed in their original location and a condition equal to or better than original. This shall be considered as part of the sewer installation and replacement shall be done immediately after the installation and backfiling of the sewer. The costs for the removal, relocation, and replacement shall be included with the price bid for various contract items.

1.13 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The CONTRACTOR shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Immediately repair any damage resulting from the construction operations, at no additional cost to the CITY. The CONTRACTOR shall assume that there is at least one water, gas, underground electric, telephone, etc., branch serving each building.

B. The CONTRACTOR, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines and sewers). Maintain services to buildings and pay costs or charges resulting from damage thereto.

C. The CONTRACTOR shall notify the Ohio Utilities Protection Service at least forty-eight (48) hours prior to start of excavating in any public way and also notify in writing all non-partipipating utility companies (non-OUPS) in writing at least forty-eight (48) hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way.

D. If, in the opinion of the CITY, permanent relocation of a utility owned by the CITY is required, the CITY may direct the CONTRACTOR, in accordance with Article 10 of the General Conditions, to perform the Work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 11 of the General Conditions. If relocation of a

privately owned utility is required, the CITY will notify the Utility to perform the work as expeditiously as possible. The CONTRACTOR shall fully cooperate with the CITY and other utilities. No claim for delay will be allowed due to such relocation.

E. The CONTRACTOR shall coordinate the removal, replacement, and resetting and/or updating the timing of traffic loops and signals, if required for the performance of the work, at no additional cost to the CITY.

1.14 WATER FOR CONSTRUCTION PURPOSES

A. The CONTRACTOR may be allowed to use, if available, non-potable plant water after express approval from the CITY at no charge. The CITY reserves the right to restrict access or charge for plant water service if CONTRACTOR abuses his right of use, including water wastage or excessive use.

B. Waste of water shall be sufficient cause for withdrawing the privilege of use. Hydrants shall only be operated with proper approval from the CITY and water utility. It is the CONTRACTOR's responsibility to obtain approval from the water utility and comply with all requirements provided by the water utility.

1.15 DUST CONTROL

A. CONTRACTOR shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. When practical, dusty materials in piles or in transit shall be covered to prevent blowing dust.

B. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.16 POLLUTION CONTROL

A. CONTRACTOR shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes shall be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance shall be permitted to enter sanitary sewers, and reasonable measures shall be taken to prevent such materials from entering any drain or watercourse.

1.17 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under the Contract Documents shall cooperate with CONTRACTORS and Subcontractors or trades and assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the CITY.

1.18 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the Work, the CONTRACTOR shall keep the site of operations as clean and neat as possible. Dispose of all residues resulting from the construction Work and, at the conclusion of the Work, remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of the Work under the Contract Documents, the CONTRACTOR and Subcontractors shall comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and in other related Sections.

C. Disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the CONTRACTOR or any person employed by him will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. The CONTRACTOR will be required to remove the fill and restore the area impacted at no increase in the Contract Sum.

D. The CITY reserves the right to instruct specific cleanup, relocation of equipment, or disposal of material at any time.

1.19 NOISE CONTROL

A. CONTRACTOR shall take reasonable measures to prevent unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work.

B. During construction activities on or adjacent to occupied buildings, and when appropriate, CONTRACTOR shall erect screens or barriers effective in reducing noise in the building and shall conduct operations to avoid unnecessary noise which might interfere with the activities of building occupants.

C. Construction Inspection

1. The CONTRACTOR shall inspect the erosion and sediment controls once every seven (7) days; or once every 14 calendar days and within twenty-four (24) hours of a storm event

of 0.25 inches or greater. Rainfall events can be found at http://msdgc.org/radar/ A written log of these inspections shall be included as an appendix to the SWPPP and must be provided to the CITY upon request. The CONTRACTOR shall be responsible for correcting any deficiencies found and identified by their own inspection or by inspection performed by the CITY throughout the entire project.

D. Payment

1. Prior to payment, the CITY shall approve the SWPPP and the CONTRACTOR shall provide a copy of the Ohio EPA NOI approval or a copy of the Ohio EPA receipt of the NOI in the instances where t
2. he approval is assumed after the standard commenting period has expired. Payment shall be made under the bid item Stormwater Pollution Prevention Plan as specified in section 01 20 00 "Measurement and Payment" and shall include payment for Mitigative Measures and Erosion Control Plan.

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1.20 MITIGATIVE MEASURES

A. The CONTRACTOR will be responsible for providing the necessary material and labor to follow all mitigative measures indicated on the plans throughout the entire project. The mitigative measures stated on the plans are guidelines to be followed during the construction; alternatives to these measures should be submitted to the CITY for approval two (2) weeks prior to the construction in the area affected by the change.

B. Work adjacent to and within the stream will be strictly observed by the CITY to assure compliance with the Contract Documents.

C. The Metropolitan Sewer District will provide a qualified environmental inspector to oversee construction operations for the more environmentally sensitive portions of this construction project. The role of the environmental inspector will be to assure that the CONTRACTOR is aware of the sensitive areas within the project and of the steps necessary to complete the project with a minimum of environmental impacts. The environmental inspector will also inspect the project to assure that the mitigative measures and these specifications are adhered to by the CONTRACTOR during the construction of the project and during site restoration activities.

D. Soil erosion and sedimentation controls shall be installed and maintained over the duration of the project as needed. These controls shall be located within or along the edge of construction between the proposed sewer line and the stream.

E. Temporary and permanent seeding shall be completed in stages to assure the restoration of the area disturbed during construction.

F. The CONTRACTOR shall give special attention to proper sewer construction, protection of the stream and riparian areas and the following mitigative measures, as well as those shown on

the drawings. These measures are being taken so that the stream can be restored to pre-construction conditions as much as practical.

1. The CONTRACTOR shall maintain all haul roads throughout the construction to prevent unnecessary construction traffic from using the creek in areas not disturbed by actual sewer construction.
2. The CONTRACTOR shall maintain existing stream cover by not removing or disturbing trees along the stream bank and other miscellaneous in-stream shading items. While working along the stream, use the area on the opposite side of the sewer from the stream for material storage and stock piling of excavated trench material.
3. Construction within the creek area shall be initiated and completed during normal to low periods of flow.
4. During high creek flow periods, construction work in the creek is prohibited; construction of sewer segments in areas away from the creek will be permitted.
5. At creek crossings, do not disturb the vegetation within the construction easement, except for the area required for excavation and equipment passage. This creek crossing shall include the creek and the creek banks.
6. When necessary, the creek flow can be temporarily diverted around the construction area, provided the method to be used receives prior approval by the CITY and any disturbance to the stream is minimized. Disturbed areas shall be immediately restored, using the proper mitigative measures.
7. No solid or liquid wastes, including construction materials, shall be dumped or discharged into waterways or left where they may be washed away with stormwater runoff.
8. Where the trench crosses a stream with a solid or layered rock bottom, the CONTRACTOR shall saw cut the trench edges to a minimum depth of four inches (4"). The trench shall be backfilled with Class “C” concrete as indicated in the creek crossing detail shown on the construction drawings. The CONTRACTOR also shall provide necessary means to prevent fracturing of the bedrock due to equipment crossings.
9. All excess spoil material shall be removed from the stream corridor area promptly and disposed of in an environmentally sound manner. If wasted on site after securing the necessary permits and with CITY approval, it must be placed outside the riparian area and seeded immediately.
10. Stream bank restoration or rock channel protection shall be used, as directed by the CITY when the excavation of the sewer disturbs the stream bank. The protection shall be a minimum of two feet (2') thick from stream's edge to a minimum of two feet (2') above normal flow elevation, unless otherwise shown on the plans. Above this rock channel protection, a ten-foot (10') wide strip parallel to the stream shall be planted with live stakes or posts, per section 32 93 00, and the remaining slope seeded with fescue and clover. If the creek bank slope is greater than 3:1, including small drainage swales, the CONTRACTOR shall use erosion control devices to prevent erosion, as per ODOT specification Item No. 670 and ODOT Standard Drawing DM-4.2M, Jute and Excelsior Matting.
11. Dewatering flows are to be settled or filtered before discharge to stabilized sites, such as streams or storm sewers, not onto exposed soils, streambanks, or any other sites where the flows could cause erosion
12. The cost for this work shall be included in the price bid for the applicable Environmental Compliance bid item.

1.21 EROSION CONTROL PLAN

A. The CONTRACTOR will be responsible for submitting an Erosion Control Plan to the CITY prior to the initiation of any construction work. The plan shall be submitted within two (2) weeks following the Notice of Award of the Contract. Once approved, the plan shall be used by the CONTRACTOR throughout the project. Deviations from the approved plan shall be submitted to the CITY three (3) weeks prior to the change for the CITY's consideration.

B. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation shall be preserved to the greatest extent practical. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

C. The CONTRACTOR shall be responsible to check the Mitigative Measures installed on a weekly basis and correct any deficiencies found or identified by the CITY throughout the entire project.

D. The plan shall be used to address the environmental concerns shown on the Contract Drawings and the Mitigative Measures of these specifications. It shall also include sound creek crossing techniques, location of access/haul roads, location of staging and stockpile sites, type and location of erosion control devices, as well as to specify a person responsible for overseeing the implementation of the Erosion Control Plan.

E. The following shall be used as a guide to develop the Erosion Control Plan:

1. Stream Crossing Work- Detail method of construction and stream flow diversion (i.e., cofferdams, by-pass pumping, etc.); specify st
2. ream bank and vegetation protection; excavated material and bedding material stockpile location.
3. Access/Haul Roads- Identify ingress and egress points along sewer alignment; location of haul roads within construction limits along riparian areas; method of haul road creek crossing (culvert, temporary bridge, etc.); proposed access points on private property.
4. Staging/Stockpile Sites- Identify location of potential site.
5. Erosion Control Devices- Identify type of erosion control device (silt fence, stream bates, rock check dams, etc.); show location of devices (stream crossings, sloping areas, etc.); timing and method of permanent stabilization and re-vegetation.

F. The cost of this work shall be included in the price bid for the applicable Environmental Compliance bid items.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

1.22 CSX RAILROAD CONSTRUCTION AND INSURANCE REQUIREMENTS

A. In addition to the requirements described in section 1.06 in this specification, the CONTRACTOR shall follow the requirements provided in the attached "Exhibit A" the jack and bore crossing during construction.

B. The CONTRACTOR shall provide a copy of their certificate of liability insurance stating "CSX Transportation, Inc." as additional insured, as shown in the attached example.

C. The CONTRACTOR shall provide a copy of their railroad protective liability (RPL) insurance or coordinate with CSX to obtain the insurance. See the attached example.

D. The CONTRACTOR shall provide copies of all insurance to the following:

CSX Transportation Inc.

500 Water Street, C-907

Jacksonville, FL 32202

Attn: John White

Ref No. 1047209

1.23 INDIANA & OHIO RAILWAY (GENESEE & WYOMING RAILROAD) CONSTRUCTION AND INSURANCE REQUIREMENTS

A. The CONTRACTOR shall provide a copy of their general liability certificate meeting the following requirements:

- General Liability insurance naming the Indiana & Ohio Railway, its Parent Company and Affiliates as additional insured, and must meet the minimum requirements of $2M per occurrence and $6M aggregate per the terms of the attached agreement.
- If using the Excess or Umbrella Liability, it must show Indiana & Ohio Railway, its Parent Company and Affiliates as additional insured.
- Automobile Insurance must name Indiana & Ohio Railway, its Parent Company Affiliates as additional insured with no limit less than $1M bodily injury and property damage per occurrence.
- The General Liability certificate is required to show proof of CG2417. (Contractual Liability Railroads)

- Evidence of Workers Compensation must be provided on certificate and meet the minimum requirements of $1M.
- Waiver of Subrogation must be shown in favor of Indiana & Ohio Railway, its Parent Company and Affiliates for the General Liability, Automobile Liability, Excess/Umbrella Liability and Workers Compensation. (If this is not applicable by law, please provide documentation.)

B. The CONTRACTOR shall provide a copy of their railroad protective liability (RPL) insurance naming Indiana & Ohio Railway, its Parent Company and Affiliates as named "insured" or complete the attached application and coordinate with the Railroad to obtain the insurance.

C. The CONTRACTOR shall provide copies of all insurance and completed applications to the following:

Donna Killingsworth
Sr. Manage Utilities
Genesee & Wyoming Railroad Services, Inc.
Attn: Real Estate Department
13901 Sutton Park Drive South, Suite 270
Jacksonville, Florida 32224
(904) 900-6286
Donna.killingsworth@gwrr.com

It is acceptable to sign, scan, and email the documents.

D. List of Attachments to Appendix C

1. Railroad Protective Liability Application

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION 011400

SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Partial Payments

C. Part 1 Bid Items by the Ohio Department of Transportation Construction and Material Specifications, Reference Number (Ref. No.), and item description.

D. Final Payment Considerations

1.02 RELATED DOCUMENTS

A. Retainage to be held is in Section 00 52 01 “City-Contractor Agreement”

B. Section 01 14 00 “Control of Work”

1.03 SCOPE

A. CONTRACTOR shall furnish all labor, materials, tools, equipment, appurtenances and services, including operation and maintenance manuals and training and start-up services necessary to perform all work required, at the lump sum or unit prices for the items listed herein and such lump sum and unit prices shall represent full compensation for such work.

B. The bid items listed herein constitute all of the Items under which payment will be made. No direct or separate payment will be made for providing miscellane

C. ous temporary or accessory works, plant services, layout surveys, sanitary requirements, testing safety devices, approval and record drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, bonds (except Performance Bond), insurance, project coordination and all other requirements of the Contract Documents. Compensation for al

D. l such services and materials shall be included in the prices stipulated for the lump sum and unit price Items listed herein.

E. Furthermore, all work shown on the Drawings shall be a part of the Documents whether specifically noted elsewhere in Contract Documents or not.

F. The CITY will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. The CITY will review with CONTRACTOR the CITY’s preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). The CITY’s written decision

thereon will be final and binding (except as modified by the CITY to reflect changed factual conditions or more accurate data) upon the CITY and CONTRACTOR, subject to the provisions of Article 10, Paragraph 10.05 Changes In The Work; Claims of Section 00 72 00 General Conditions.

1.04 PARTIAL PAYMENTS

A. Partial payments shall be made by the CITY in accordance with the following schedule:

1. Eighty percent (80%) of the unit price bid for Jack and Bore, and Directional Drill be paid for pipe installed as per plans.
2. Seventy percent (70%) of the unit price bid for Type “B”, Type “C”, and Type “G” Conduit shall be paid for pipe installed, including initial backfill.
3. An additional ten percent (10%) of the unit price bid for Directional Drill, Jack and Bore, Type “B”, Type “C”, and Type “G” Conduit shall be paid when the pipe passes the leakage test, and the deflection test when plastic pipe is installed.
4. The remaining portion of the unit price bid shall be paid when videotaping of the installed sewers and final restoration has been completed. Final restoration is defined as when seeding/mulching is in place in unpaved areas, and when pavement/roadway work is complete in paved areas.

1.05 PART 1 BID ITEMS BY REFERENCE NUMBER (REF. NO.) AND ITEM DESCRIPTION

A. 201 (Ref. No. 1) – CLEARING AND GRUBBING: Clearing and grubbing shall be performed in accordance Ohio Department of Transportation (ODOT) Construction and Materials Specification (CMS) Item 201 and the City of Cincinnati Supplement to the ODOT CMS, Item 201, except as otherwise noted herein.

1. Two days prior to clearing and grubbing, the construction limits shall be marked and the CONTRACTOR shall walk the project with CITY personnel to locate trees to be saved and trees to be removed.
2. The CITY requires the CONTRACTOR to perform the clearing and grubbing in stages. The stages are limited to cover the next three months of construction progress.
3. Payment for all labor, materials, and equipment necessary to complete the work shall be at the lump sum bid price.

B. 202 (Ref. No. 2) – SEAL AND ABANDON EXISTING SEWERS: Sewers that are to be abandoned shall be plugged or sealed where they join manholes, catch basins, inlets, or other structures. All existing sewers encountered in construction operations that are inactive, or are to be abandoned as determined by the CITY, shall be plugged or sealed at both ends where broken into, before proceeding with backfilling.

1. Where plugging or sealing is required, pipe less than 12-inches in diameter shall be sealed by the installation of a suit
2. able precast concrete or vitrified clay stopper, properly cemented into place.
3. Payment will be lump sum payment at the unit price bid.

C. 202 (Ref. No. 3) – MANHOLES ABANDONED: Manholes shall be abandoned in accordance with Item 202.12 of ODOT CMS. All castings shall be disposed of at the CONTRACTOR's expense. This item shall include all sanitary manholes to be abandoned as shown on the Drawings or as directed by the CITY.

1. The material used for filling the existing manholes shall be Controlled Low Strength Material (CLSM), or a mixture of Fly Ash and water at a rate of 1,900 pounds of Fly Ash to 950 pounds of water. A sand and water mixture is also acce
2. ptable when abandoning manholes outside of the right-of-way. Mixture may be varied as approved by the CITY.
3. For manholes abandoned within the City of Cincinnati, the structure shall be removed to a depth of at least 6 feet below grade.
4. Restoration of pavement, concrete, and sod/grass shall be included in this item.
5. Payment will be made for each manhole abandoned.

D. 202 (Ref. No. 4) – MANHOLES REMOVED: Manholes shall be removed in accordance with Item 202.12 of ODOT CMS. All castings shall be disposed of at the CONTRACTOR's expense. This item shall include all sanitary manholes to be removed as shown on the Drawings or as directed by the CITY.

1. Payment will be made for each manhole removed.

E. 202 (Ref. No. 5) - REMOVE AND SALVAGE EXISTING PUMP STATION: Work under this item consists of removing the pump station to the limits shown on the Drawings and as specified in section 02 41 13 Demolition. Payment will be lump sum payment at the unit price bid.

F. 210 (Ref. No. 6) – SPECIAL EXCAVATION: This is a CONTINGENCY item. This item shall be in accordance with Item 210 of the City Supplement to the ODOT CMS. Payment will be based on the unit price bid per cubic yard and will be used only when directed by the CITY.

G. 211 (Ref. No. 7) – SPECIAL FILL MATERIAL (BANK RUN GRAVEL): This is a CONTINGENCY item. This item shall be in accordance with Item 211 of the City Supplement to the ODOT CMS and shall be furnished by the CONTRACTOR when this type of material is required in the work. Only special fill material (Bank Run Gravel) not included in other pay items shall be measured for payment. Payment will be made at the unit price bid per ton and shall be used only when directed by the CITY.

H. 211 (Ref. No. 8) – SPECIAL FILL MATERIAL (NO. 2 GRAVEL BEDDING): This is a CONTINGENCY item. This item shall be in accordance with Item 703 of the ODOT CMS and shall be furnished by the CONTRACTOR when this type of material is required in the work. Only special fill material (No. 2 Gravel Bedding) not included in other pay items shall be measured for payment. Payment will be made at the unit price bid per ton and shall be used only when directed by the CITY.

I. 602 (Ref. No. 9) – CONCRETE MASONRY, CLASS "C": This is a CONTINGENCY item. This

item shall be in accordance with Item 602 of the ODOT CMS. Only special Class "C" Concrete Masonry not included in other pay items shall be measured for payment. Payment will be made at the unit price bid per cubic yard and shall be used only when directed by the CITY.

J. 602 (Ref. No. 10) – CONCRETE MASONRY, CLASS "C" (ENCASEMENTS, CRADLES, KEY BLOCKS AND COLLARS): This is a CONTINGENCY item. This item shall be in accordance with Item 602 of the ODOT CMS. Only special Class "C" Concrete Masonry used for encasement, cradles, key blocks, and collars, in addition to those items called for on the Drawings, shall be measured for payment, as directed by the CITY. Payment will be made based on the unit price bid per cubic yard.

K. 603 (Ref. No. 11) – 8" CONDUIT, TYPE "B": This item includes all work required to complete the pipe sewers in accordance with applicable sections of these specifications and Standard Drawing Acc. No. 49032. CONTRACTOR shall supply pipe in accordance with Item 603.02 of the City Supplement to ODOT CMS and section 33 31 00 "Sewer Pipe", as specified on the Drawings.

1. The price bid for this item shall be complete and include (but not limited to) all necessary site preparation, excavation, embankment, dewatering, maintenance of flow, sheeting, preparation of trench bottom, granular bedding and initial backfill, pipe, joint material, backfill, testing, disposal of excess material, dust control, lights, odor control, signs and barricades, noise control, cleaning up, saw cutting, maintenance of traffic, and restoration.
2. Payment will be made at the unit price bid per linear foot.

L. 603 (Ref. No. 12) – 8" CONDUIT, TYPE "C": This item includes all work required to complete the pipe sewers in accordance with applicable sections of these specifications and Standard Drawing Acc. No. 49032. CONTRACTOR shall supply pipe in accordance with Item 603.02 of the City Supplement to ODOT CMS and section 33 31 00 "Sewer Pipe", as specified on the Drawings.

1. The price bid for this item shall be complete and include (but not limited to) all necessary site preparation, excavation, embankment, dewatering, maintenance of flow, sheeting, preparation of trench bottom, granular bedding and initial backfill, pipe, joint material, backfill, testing, disposal of excess material, dust control, lights, odor control, signs and barricades, noise control, cleaning up, saw cutting, maintenance of traffic, and restoration.
2. Payment will be made at the unit price bid per linear foot.

M. 603 (Ref. Nos. 13) – 6" CONDUIT, TYPE "C": This item includes all work required to complete the pipe sewers in accordance with applicable sections of these specifications and Standard Drawing Acc. No. 49032. CONTRACTOR shall supply pipe in accordance with Item 603.02 of the City Supplement to ODOT CMS and section 33 31 00 "Sewer Pipe", as specified on the Drawings.

1. The price bid for this item shall be complete and include (but not limited to) all necessary site preparation, excavation, embankment, dewatering, maintenance

of flow, sheeting, preparation of trench bottom, granular bedding and initial backfill, pipe, joint material, backfill, testing, disposal of excess material, dust control, lights, odor control, signs and barricades, noise control, cleaning up, saw cutting, maintenance of traffic, and restoration.

2. Payment will be made at the unit price bid per linear foot.

N. 603 (Ref. No. 14) – 14" CONDUIT, TYPE "G" WITH COMPRESSION JOINTS – JACK & BORE: This item includes all work required to complete the pipe sewers in accordance with section 31 70 00 "Trenchless Pipe Installation", applicable sections of Item 603 of the City Supplement to ODOT CMS, and according to notes and details shown on the Drawings. CONTRACTOR shall supply Ductile Iron Pipe in accordance with Item 603.02 of the City Supplement to ODOT CMS and section 33 31 00 "Sewer Pipe", article 2.06.

1. The price bid for this item shall be complete and include (but not limited to) all necessary site preparation, excavation, embankment, dewatering, maintenance of flow, sheeting, preparation of trench bottom, granular bedding and initial backfill, pipe, joint material, backfill, testing, disposal of excess material, dust control, lights, odor control, signs and barricades, noise control, cleaning up, saw cutting, maintenance of traffic, and restoration.
2. Jacking and receiving pits will not be paid for as a separate pay item. All associated costs for pits shall be included in the price bid for this item. The location and dimensions of the Jacking pits, as determined by the CONTRACTOR, shall be approved by the CITY prior to any excavation operations.
3. The length of conduit to be paid shall be the actual number of linear feet measured from one end of the bored casing to the other end of the bored casing at the unit price bid per linear foot. The maximum footage that will be paid under this item will be that shown on the Drawings, unless otherwise directed by the CITY.

O. 603 (Ref. No. 15) – 8" I.D. HDPE CONDUIT – DIRECTIONAL DRILL: This item includes all work required to complete the pipe sewers in accordance with section 31 70 00 "Trenchless Pipe Installation" and according to notes and details shown on the Drawings. CONTRACTOR shall supply pipe in accordance with 33 31 00 "Sewer Pipe", article 2.04. Payment will be made at the unit price bid per linear foot.

P. 603 (Ref. No. 16) – STANDARD TWO-WAY CLEANOUT: This item shall be in accordance with Standard Drawing Acc. No. 61979 & 61979-A. Payment will be at the unit price bid for each Two-Way Cleanout.

Q. 603.059 (Ref. No. 17) – VIDEO TAPING OF INSTALLED SEWERS, LATERALS and MANHOLES: This item shall be in accordance with 603.059 of the City Supplement to ODOT CMS and section 33 31 00 "Pipe Sewers". Payment will be lump sum at the unit price bid, provided that the CONTRACTOR submits all required information, has the correct format, and that CAGIS manhole numbers are included.

R. 603.059 (Ref. No. 18) – HEAVY CLEANING AND VIDEO TAPING OF EXISTING 8" SEWER: This item shall be in accordance with 603.059 of the City Supplement to ODOT CMS and section 33 31 00 "Pipe Sewers". Payment will be lump sum at the unit price bid, provided that the

CONTRACTOR submits all required information, has the correct format, and that CAGIS manhole numbers are included.

S. 604 (Ref. No. 19) – REMODEL BOTTOM OF EXISTING MANHOLE: This item shall be constructed in accordance with Standard Drawing Acc. No. 49004 and as directed by the CITY. Payment will be at the unit price bid for each manhole bottom remodeled.

T. 604 (Ref. No. 20-22) – STANDARD TYPE "S" MANHOLE: This item shall be constructed in accordance with Standard Drawing Acc. No. 49037, except as otherwise noted on the Drawings or in section 33 39 00 "Sewer Manholes". If PVC pipe is installed, the precast manhole base shall be used in accordance with Standard Drawing Acc. No. 49056. Payment will be made at the unit price bid for each manhole, and shall include the cost for all proposed and existing connections/reconnections, as necessary to install the manhole.

U. 604 (Ref. No. 23 and 24) – STANDARD TYPE "S" DROP MANHOLE: This item shall be constructed in accordance with Standard Drawing Acc. Nos. 49003, 49003A, and 49037, except as otherwise noted on the Drawings or in section 33 39 00 "Sewer Manholes". Payment will be made at the unit price bid for each manhole, and shall include the cost for all proposed and existing connections/reconnections, as necessary to install the manhole.

V. 606 (Ref. No. 25) – GUARDRAIL: This item shall consist of removing existing guardrail, guardrail posts, blockouts, terminal components, and all associated hardware as necessary to perform the work shown on the plans, and reinstalling guardrail to match existing conditions in accordance with ODOT Item 606 and applicable ODOT Standard Construction Drawings.

W. SPEC (Ref. No. 26) – ENVIRONMENTAL COMPLIANCE (MITIGATIVE MEASURES & EROSION CONTROL PLAN) : This shall be in accordance with applicable items in section 01 14 00 "Control of Work". Seventy-five percent (75%) of the lump sum bid price will be paid upon the CITY's approval of the CONTRACTOR's Erosion Control Plan, with the remaining portion being paid after verification of compliance with all the Mitigative Measures upon completion of the project.

X. SPEC (Ref. No. 27) – ENVIRONMENTAL COMPLIANCE (CREEK BANK RESTORATION): The cost for this item shall be complete, including the cost for saw cutting existing rock layers, furnishing and placing concrete, rock channel protection, dump rock, excavation, soil placement, and will sprig plantings as per the Creek Crossing Detail on the Drawings and as described in applicable items of section 01 14 00 "Control of Work". Payment will be made at the unit price bid per linear foot of creek crossing restoration.

Y. SPEC (Ref. No. 28) – ENVIRONMENTAL COMPLIANCE (SILT FENCE): The CONTRACTOR shall install silt fencing in the manner as indicated on the Drawings and applicable sections of 01 14 00 "Control of Work". Seventy five percent (75 %) of the unit bid price per linear foot of silt fence will be paid upon installation, with the remaining portion being paid when fencing is removed and final restoration is completed.

Z. SPEC (Ref. No. 29) – CULVERT ASSESSMENT: Contractor to perform an evaluation and analysis of existing culvert to confirm structure is compatible with anticipated construction

loads. Payment will be lump sum at the unit price bid, provided that the CONTRACTOR submits his findings for review.

AA. SPEC (Ref. No. 30) – RAILROADFLAGGERS AND PERMITS ALLOWANCE: this item shall cover a railroad flagger and any permits required for work on the Baltimore & Ohio Railroad Company Property near Camargo Road, depicted on Sheet 5 of the drawings. A railroad flagger will be required during construction. Flagging is at the discretion of the railroad operations team. A flagger is typically required when the contractor is present within 25 feet of track, including whenever the contractor crosses the tracks. Payment for any such work will be made under this item for the actual cost billed by the railroad, including a markup not to exceed 5% for CONTRACTOR costs.

BB. SPEC (Ref. No. 31) – PERFORMANCE BOND: The CONTRACTOR shall include the cost of the performance bond in the proposal. The cost entered in the Proposal should not exceed one percent (1%) of the official bid price.

1. This item shall be included for payment on the first partial estimate.
2. In the event the cost entered in the Proposal exceeds one percent (1%) of the official bid price, the cost over one percent (1%) will be paid with the final payment.

1.06 FINAL PAYMENT

A. Comply with the requirements for Final Payment contained in the Contract Documents, including Article 14.07 of Section 00 72 00 General Conditions and Section 01 77 00 Contract Closeout.

B. Before final payment is made to the Contractor, the Contractor shall submit to the CITY a release, in writing, from all the property owners whose property has been used by the Contractor outside the limits of construction and/or Right-of-Way.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 20 00

SECTION 01 26 00

CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Schedule of Values.

B. Application for Payment.

C. Contract Modification Procedures.

D. Change Order Procedures.

E. Project Management Communications Using E-Builder

1.02 SCHEDULE OF VALUES

A. SCOPE : The Schedule of Values is an itemized list that established the value or cost of each Pay Item that is part of the Work. The Schedule of Values shall be used as the basis for preparing Application for Payments and may be used as a basis of negotiations concerning additional work or credits which may arise during the construction. Quantities and unit prices shall be included in the schedule when approved by or required by the CITY.

B. PREPARATION: The Schedule of Values shall correspond to a WBS rollup from the approved cost loaded schedule. The Schedule of Values shall include the following:

1. Show breakdown of labor, materials equipment and other costs used by CONTRACTOR in preparation of the Bid for the Project.
2. Prepare Schedule of Values on 8-1/2" by 11" format.
3. Upon request by the CITY, CONTRACTOR shall provide data that will substantiate the amounts in the Schedule of Values.
4. The sum of the individual values shown on the Schedule of Values must equal the individual Pay Item included in the CONTRACTOR's Bid.
5. The manner in which overhead and profit are shown shall be approved by the CITY.
6. The Schedule of Values shall show the purchase costs for materials and equipment to be stored on site prior to installation that the CONTRACTOR anticipates he shall request payment for prior to their installation.

C. SUBMISSION

1. Submit one copy of Schedule of Values to CITY for review at the Preconstruction Conference and before work commences on the Project. After review by the CITY, revise and resubmit Schedule of Values as required until it is accepted.

1.03 APPLICATIONS FOR PAYMENT

A. CONTRACTOR shall submit Applications for Payment in accordance with the Contract Documents, including this Section and Paragraph 14.02 of section 00 72 00 Modified Standard General Conditions.

B. CONTRACTOR shall submit each Application for Payment on CITY's "Application and Certificate for Payment Summary Sheet" and "Continuation Sheet"; CONTRACTOR's electronic media printout containing similar information will be considered as a substitute for CITY's "Continuation Sheet

C. A current updated version of the CONTRACTOR's Construction Schedule shall accompany each Application for Payment in accordance with specification section 01 32 16.

D. Use approved Schedule of Values or Bid Item Quantities, including a list of approved Change Orders, with each Application for Payment.

E. Payment Period: In accordance with the requirements in Paragraph 14.02 of section 00 72 00 Modified Standard General Conditions.

F. Include CITY's "Stored Materials and Equipment" form when requesting payment for stored materials and equipment not yet incorporated into the Work.

1.04 CONTRACT INFORMATION / NOTIFICATION PROCEDURES

A. Request for Information (RFI): CONTRACTOR shall use CITY's RFI form, filled out and submitted via e-Builder®, to request information, interpretations, clarifications, and changes in the Work. CONTRACTOR shall number RFI's consecutively and add a consecutive letter to RFI number on modified submittals of the same item (i.e., RFI-4A); CITY will respond on the same form in ten (10) calendar days.

B. Field Order: CITY will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Times with a Field Order as provided in Article 1, Paragraph 1.01.22 and Article 3, Paragraph 3.04.B.1 of section 00 72 00 Modified Standard General Conditions. CONTRACTOR shall use CITY's Field Order Form filled out and submitted via e-Builder®.

C. Request for Proposal (RFP): CITY may request a written proposal from CONTRACTOR for changes in the Work. The CITY will issue an RFP describing the scope of the proposed change(s) and provide any back-up documentation required. The CONTRACTOR will respond to the RFP with twenty-one (21) calendar days of the date the RFP was issued by the CITY with a detailed cost and schedule impact associated with the proposed change(s) in accordance with Articles 10, 11

and 12 of section 00 72 00 Modified Standard General Conditions.

1.05 CHANGE ORDER PROCEDURES

A. DEFINITIONS

1. Work Directive Change (WDC): When it is necessary that changes in the Work proceed before the change in Contract Price and Contract Times can be agreed upon, CITY will issue a WDC which will authorize and direct CONTRACTOR to proceed with the Work in accordance with Article 10 of section 00 72 00 Modified Standard General Conditions. When changes in Contract Price and Contract Times are to be based upon the cost of the Work, maintain and submit cost records in accordance with Article 11 of section 00 72 00 Modified Standard General Conditions.
2. Change Order (CO): The CITY will issue CO's as needed which will authorize and direct CONTRACTOR to proceed with approved and negotiated changes in the Work. Proceed with such Work in accordance with Article 10 of section 00 72 00 Modified Standard General Conditions. Proposed Changes for which a WDC has been issued will be included in a Change Order after the Contract Price and Contract Times have been determined.

B. PRELIMINARY PROCEDURES

1. The CITY may initiate changes by submitting a Request for Proposal (RFP) to CONTRACTOR. The RFP will include:

    a. Detailed description of the change, Products and location of the change in the Project.
    b. Supplementary or revised Drawings and Specifications.
    c. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.
    d. A specific period of time during which the requested price will be considered valid.

2. Such request is for information only and is not an instruction to execute the changes, nor to stop work in progress.
3. CONTRACTOR may request a change by submitting a written request to the CITY, containing:

    a. Description of the proposed change(s).
    b. Statement of the reason for requesting the change(s).
    c. Statement of the effect on the Contract Sum and the Contract Time.
    d. Statement of the effect on the Work of separate contractors.
    e. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

4. Nothing in this section relieves the CONTRACTOR from its obligations under the claims

procedure in the Contract Documents, including, but not limited to Paragraph 10.05 of section 00 72 00 Modified Standard General Conditions.

C. WORK DIRECTIVE CHANGE AUTHORIZATION

1. Work Directive Change (WDC): When it is necessary that work representing a potential change in the Contract proceed before the terms of a Change Order can be agreed upon, the CITY may issue a WDC. A WDC will not change the Contract Sum or Contract Time, but is evidence that the parties expect that the change ordered or documented by the WDC will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Sum or Contract Times.
    1. The Work Directive Change will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Sum and any change in Contract Time. Work Directive Changes will be issued on the Work Directive Change Form included in e-Builder®.
2.
3. A WDC must be issued and signed no later than 2-days after direction is given. Verbal or e-mail authorization cannot be used in place of a WDC. Reference of the initial direction (verbal or e-mail instruction) must be noted on the WDC.
4. The CITY will sign and date the Work Directive Change as authorization for the CONTRACTOR to proceed with the changes.
5. CONTRACTOR shall sign and date the Work Directive Change to indicate agreement with the terms therein.
6. The CONTRACTOR returns the completed WDC back to the CITY.

D. DOCUMENTATION OF RESPONSES TO REQUEST FOR PROPOSALS AND CLAIMS

1. The requirements of this section are in addition to the other requirements in the Contract Documents, including, but not limited to the requirements of Article 10 of section 00 72 00 Modified Standard General Conditions and the Statement of Claim Form in specification section 00 63 64.
2. Support each lump-sum proposal and each unit price proposal, which has not previously been established, with sufficient substantiating data to allow the CITY to evaluate the quotation.
3. On request by the CITY, CONTRACTOR shall provide additional data to support time and cost computations, including, but not limited to the following:

    a. Labor required.
    b. Equipment required.
    c. Products required.

        1) Recommended source of purchase and unit cost.
        2) Quantities required.

    d. Taxes, insurance and bonds.

e. Credit for work deleted from Contract, similarly documented.
f. Overhead and profit.
g. Justification for any change in Contract Time should be based upon results of a Time Impact Analysis (TIA) as defined in Section 01 32 16, Construction Progress Schedule.

4. Support each claim for additional costs and or additional time, with documentation as required for a lump-sum proposal, plus additional information.

a. Name of the CITY's authorized representative who authorized the work and date of the authorization.
b. Dates and times work was performed and by whom.
c. Time record, summary of hours worked and hourly rates paid.
d. Receipts and invoices for:

1) Equipment used, listing dates and times of use.
2) Products used, listing of quantities.
3) Subcontracts.

1.07 PROJECT MANAGEMENT COMMUNICATIONS USING e-BUILDER

A. General: This project will utilize a web based project management tool called EBuilder®. This web based application is a collaboration tool, which will allow all project team members continuous access through the Internet to important project data as well as up to the minute decision and approval status information.

B. Project Management Communications: The CONTRACTOR shall use the Internet web based project management communications tool, E-Builder® ASP software, and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are t
he responsibility of the Contractor. The sharing of user accounts is prohibited.

C. Training: E-Builder® training will provided to the CONTRACTOR at a session scheduled by the CITY. Users are required to attend the scheduled training sessions.

D. Authorized Users: The CITY shall be responsible for procuring licensing, which allows access to the web site. Two (2) user licenses will be allocated to the CONTRACTOR.

E. Communications: The use of fax, email and courier communication for this project is prohibited in favor of using E-Builder® to send messages. Documents to be submitted via e-Builder® include but are not limited to:

1. RFI, Request for Information
2. Submittals (As identified in 01 33 00)
3. Transmittals, including record of documents and materials delivered in hard copy
4. Payment Application
5. Change Order/Change Request
6. Punch list
7. Request for Proposal
8. Meeting Minutes

F. Note: "MSD Document Control" if stated in the Contract Documents, the intent is that the use of e-Builder® supersedes the use of MSD Document Control.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 26 00

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Pre-Construction Meeting.

B. Progress Meetings.

1.02 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting will be scheduled by the CITY after award of the Contract.

B. The standard agenda for the meeting includes the following items:

1. Introduction of responsible personnel and contact information

    a. Construction Manager
    b. Construction Inspector
    c. Contractor Superintendent

2. Contract Compliance

    a. Signed contracts
    b. Equal Employment Opportunity (EEO)
    c. Subcontractors
    d. Prevailing Wage Rates
    e. Assignment of Contract (if applicable)
    f. Insurance
    g. Pay estimates

3. Safety Plan per section 01 31 21 “Site Safety Plan”– Contractor to submit three (3) days prior to the Preconstruction Meeting

4. e-Builder® Submittals

    a. Processing of Requests for Information (RFI) (this process will be unique to each project), Work Directive Change (WDC), and Change Requests (CR).
    b. Processing of Submittals (this process will be unique to each project)
    c. Refer to section 01 26 00 Contract Consideration for additional e-Builder® submittals and communication.

5. Invoicing
6. Contractor's Performance Rating
7. Contract Documents
8. Construction Schedule – Contractor to submit at the Preconstruction Meeting per section 01 32 16 "Construction Progress Schedule"
9. Submittal Register – Contractor to submit at the Preconstruction Meeting per section 01 33 00, "Submittals."
10. Notice to Proceed (NTP) date determination
11. Home Owner / Business Notification
12. Schedule of Values (Bid Item Quantities) – In accordance with Paragraph 2.05(A) (3) of the General Conditions
13. Coordination with local entities
14. Coordination with existing utilities
15. Permits (as applicable, see section 01 11 00 "Summary of Project" and section 01 14 00 "Control of Work")

    a. Erosion Control Plan
    b. Storm Water Pollution Prevention Plan
    c. Building Permit
    d. Electrical Permit
    e. Street Closing Permit
    f. ODOT Permit
    g. Other

16. Testing (both CQC and acceptance) – soil compaction, concrete, pipe deflection, manholes, other
17. Use of Premise
18. Restoration
19. CCTV of sewers (if applicable)
20. Record Drawings.

C. It is mandatory the CITY and CONTRACTOR attend this meeting. Other regulatory or financial personnel may be requested to attend, along with major subcontractors and suppliers.

D. This meeting will be chaired by the CITY, who will record and distribute meeting minutes.

1.03 PROGRESS MEETINGS

A. The CITY shall, at a prescribed time and place, hold project progress meetings each month, to coordinate the Work and discuss Work status, as well as problems that may arise concerning proper timing and execution of the Work.

1. Additional meetings may be requested and scheduled by the CITY or CONTRACTOR as the need arises.
2. Responsible representatives of the CONTRACTOR and the CITY shall attend each progress meeting. Subcontractors may occasionally be asked to attend.
3. The CITY shall preside and take minutes of each entire meeting, and subsequently reproduce and distribute such minutes to all parties concerned within one (1) week

following each meeting.

4. The only active audio or video recording device permitted will be that of the person presiding at the meeting. If used, the recording media shall be maintained as a Record Document, as outlined in Section 01 78 39.
5. Suggested Progress Meeting Agenda:

    a. Review and approval of minutes of previous meeting
    b. Review of work progress since previous meeting
    c. Field observations, problems, and conflicts
    d. Problems which impede construction schedule
    e. Review of off-site fabrication, delivery schedules
    f. Corrective measures and procedures to regain projected schedule
    g. Revisions to Construction Progress Schedule
    h. Progress, schedule, during succeeding work period
    i. Coordination of schedules
    j. Review submittal schedules; expedite as required
    k. Maintenance of quality standards
    l. Pending changes and substitutions
    m. Review proposed changes for:

        1) Effect on construction schedule and on completion date
        2) Effect on other contracts of the Project

    n. Other business

B. Immediately prior to commencing Work on each new phase of Project construction, CONTRACTOR's Project superintendent shall hold a coordination meeting with the trade foreman who will supervise or perform the new phase of work, to review Drawings and Specifications. CONTRACTOR shall advise the CITY of the date of such meetings and who will be in attendance. After the meeting is held, CONTRACTOR shall promptly submit a written report to the CITY.

C. CONTRACTOR shall schedule weekly job progress meetings between himself and major subcontractors. CONTRACTOR shall coordinate with the CITY on the time and place of the meeting, which shall be the same day and hour of the week for the duration of the work, except upon instructions of the CITY; the meetings may be increased or decreased as required by the progress of the work.

D. CONTRACTOR shall be responsible for notifying all subcontractors of the time and place of job meetings, when the participation of the subcontractor is requested by the CONTRACTOR or by the CITY.

E. Conduct meetings in a manner that will best resolve coordination issues.

F. CONTRACTOR shall conduct the job meetings. The CONTRACTOR will take notes on discussions and conclusions and will distribute with seventy-two (72) hours, excluding Saturdays, Sundays, and holidays, sufficient printed copies to those others concerned; two (2) copies shall be furnished to the CITY.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 31 19

SECTION 01 31 21

SITE SAFETY PLAN

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Scope.

1.02 RELATED SECTIONS

A. Project Meetings are included in Section 01 31 19.

B. Submittals included in Section 01 33 00.

1.03 SCOPE

A. Submit prior to start of work a Site Safety Plan, which at a minimum:

1. Lists key personnel and alternates responsible for site safety along with means of contacting these personnel at all times.
2. Names one person as a Competent Person responsible for site safety activities and includes a resume of their qualifications to be a Competent Person.
3. Describes the risks associated with each operation conducted.
4. Confirms that personnel are adequately trained to perform their job responsibilities and operate necessary equipment, handle the specified hazardous situations they may encounter, and includes a resume of personnel qualifications and associated training certifications.
5. Describes the protective clothing and equipment personnel will wear during various site operations.
6. Describes any site-specific medical surveillance requirements (hazardous waste or material sites only).
7. Describes the program for periodic air monitoring, personnel monitoring, and environmental sampling, if needed (hazardous waste or material sites only).
8. Describes the actions to be taken to mitigate existing hazards (e.g., containment of contaminated materials) to render the work environment less hazardous, including assurance that contractor equipment utilized in the work conforms to the following:
    a. OSHA Part 1910 Subpart O, “Machinery and Machinery Guarding”
    b. ANSI/ASME B15.1, “Safety Standard for Mechanical Power Transmission Apparatus”
    c. ANSI/ASME B20.1, “Safety Standard for Conveyor and Related Equipment”
9. Defines site control measures and includes a site map.

B. Sets forth a Contingency Plan for safe and effective response to emergencies.

C. Sets forth the site's Standard Operating Procedures (SOPS). SOPS are those standardized activities that use a checklist. The procedures should be:

1. Prepared in advance.
2. Based on the best available information, operational principles, and technical guidance.
3. Field-tested by qualified health and safety professionals and revised as appropriate.
4. Appropriate to the types of risk at that site.
5. Formulated to be easy to understand and practice.
6. Provided in writing to all site personnel who should be briefed on their use.
7. Included in training programs for site personnel.

D. Display a copy of the Site Safety Plan at the work site at all times.

E. In addition, supply to the Engineer any safety information or documentation any state or federal agency requires under law.

F. A required Site Safety Plan template is available at:

G. https://msdgc.org/doing-business-with-us/capital-project-resources/capital-project-resource-library/

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 31 21

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Software/Interface Requirements.

C. Quality Assurance.

D. Non-Compliance.

1.02 RELATED SECTIONS

A. General Conditions are included in Section 00 72 00, including Paragraph 6.04.

B. Contract Considerations are included in Section 01 26 00, including Paragraph 1.03, Schedule of Values

C. Submittals are included in Section 01 33 00.

D. Project Meetings are included in Section 01 31 19.

E. Substantial Completion as included in Section 01 77 19.

1.03 SCOPE

A. A clear and complete Construction Progress Schedule (CPS) is required for the Project. Most importantly, the CPS shall be a tool which the CONTRACTOR and his agents will use to manage their Work and scope of the Project. The schedule must provide a tool that all parties involved in the Project can use to understand the status of and intended Project plan throughout the execution of the Project.

B. The CONTRACTOR shall manage the work following the sequence defined by the CPS, and the schedule shall be the document from which Project progress is measured.

C. The schedule shall reflect the activities of the CONTRACTOR and all subcontractors.

1.04 SOFTWARE/INTERFACE REQUIREMENTS

A. The CONTRACTOR shall use modern Critical Path Methodology (CPM) scheduling software to produce the Project schedules, including the CPSs and reports as specified. This software shall run on the Microsoft Windows operating system and be able to produce electronic schedule files that are compatible with Primavera Project Manager Version P6 software.

1.05 QUALITY ASSURANCE

A. The CONTRACTOR shall employ a firm or individual to perform the work covered by this section that shall have substantive experience in using computer based scheduling programs on construction projects (the "Scheduling Consultant"). The CONTRACTOR shall submit the following as a minimum:

1. Identification, qualifications, and experience of the members of the CONTRACTOR's scheduling staff or any consultant's staff. The designated Scheduling Consultant shall have at least five (5) years of experience in the computerized scheduling of public or industrial construction work. The CONTRACOR shall provide a resume for the designated individual(s) that details all qualifications, experience, and references for the CITY's approval.

2. The CITY may reject any member of the CONTRACTOR's scheduling staff or any of Contractor's Scheduling Consultant's staff. The CONTRACTOR shall promptly replace rejected personnel and resubmit the above required qualifications for acceptable personnel at no additional cost to the CITY.

1.06 NON-COMPLIANCE

A. Pending an acceptable submission of the CPS, no partial payment will be made except in such amounts as may be approved by the CITY for materials received at the Project Site, plus any additional amounts that the CITY decides to release.

PART 2 - PRODUCTS

2.01 CONSTRUCTION PROGRESS SCHEDULES GENERAL CRITERIA

A. The CONTRACTOR shall submit all Project Schedules on 11" x 17" format. In addition, the CONTRACTOR shall submit schedule in PDF format and the designated Primavera-compatible file format. The initial submittal shall be made at or before the pre-construction meeting.

B. The Project Schedules shall show the breakdown of Work into activities to the extent required to effectively manage the project. The CPS shall specify the progression of the Work from the Notice to Proceed (NTP) to the completion of the Work and shall be logically linked to include all milestones.

C. The CONTRACTOR's CPS shall include all procurement related activities that lead to the delivery of permanent materials to the site. Procurement activities include, but are not limited to, preparation of Submittals, review and acceptance of Submittals, materials fabrication, and materials delivery and shall comply with the requirements of the Contract Documents.

2.02 CONSTRUCTION PROGRESS SCHEDULE BASELINE SUBMISSION

A. The CONTRACTOR shall prepare and submit a Baseline Construction Progress Schedule for review at or prior to the Pre-Construction Meeting.

B. The CONTRACTOR's Baseline CPS shall consist of the following as a minimum:

1. A Gantt chart plot sorted by early start and early finish. The plot must clearly and legibly show all activities and predecessors and shall display each activity's identification number, description, original duration, remaining duration and total float value. The plot shall clearly show the critical path.
2. The CPS must clearly show the sequence and interdependence of activities required for complete performance of the work, beginning with the Contract Start Date (CSD) and concluding with the Contract Completion Date (CCD). The maximum duration of any physical work activity shall not exceed twenty (20) working days (or one reporting cycle) unless approved by the CITY.
3. Tabular activity reports will be required as directed by the CITY and/or the CITY's representative.

B. When the CONTRACTOR's Baseline CPS is reviewed and approved by the CITY, it becomes the "Approved Baseline" CPS. Any changes to the Baseline CPS, other than status updates, require the approval of the CITY.

2.03 CONSTRUCTION PROGRESS SCHEDULE UPDATE

A. The Contractor shall provide an updated CPS on a monthly basis.

B. Updating the CPS shall consist of manually reflecting: actual start, physical percent complete, remaining duration, actual finish, and data date. Updates shall also incorporate corrections or comments from the last submittal.

C. In the event that an update indicates negative float in excess of twenty (20) working days, the CONTRACTOR will be required to submit a CPS Recovery Schedule reflecting changes in logic, duration, or sequencing required to recover lost time. Upon approval by the CITY of the CPS Recovery Schedule, that CPS becomes the new project Baseline CPS.

2.04 CONSTRUCTION PROGRESS SCHEDULE NARRATIVE

A. CPS Narrative shall accompany the initial submittal of the CONTRACTOR's CPS. The CPS Narrative shall support and augment the CPM CPS. It shall include, but is not limited to the following:

1. An explanation of the general sequence of the Work.
2. An explanation of the Project critical path.
3. An explanation of physical constraints to completing the Work.

B. A CPS Narrative shall accompany each update to the CONTRACTOR's CPS and shall, at a minimum, address the following:

1. Milestones Completed.
2. Any actual or anticipated problems with delivery of materials or equipment.

3. Any corrective action undertaken by the CONTRACTOR to address CPS problems.
4. Anything impacting critical path, milestones and contractual completion.

2.05 CONSTRUCTION PROGRESS SCHEDULE TIME IMPACT ANALYSIS

A. If the CONTRACTOR requests an extension of the Contract Time or any Contract Milestone, the CONTRACTOR shall provide a CPS Time Impact Analysis (TIA) to support the request. At a minimum, the CPS Time Impact Analysis must contain the following:

1. A detailed network analysis based on the current approved “Baseline” CPS.
2. The Contract milestones affected and the number of additional days requested for each milestone extension.
3. A listing of all activities and logic added, deleted or changed which encompass the impact of the change.
4. A complete submittal of “before and after” CPS as detailed in this specification.
5. The CONTRACTOR’s entitlement for the request of an extension of the Contract Time and or Contract Milestone shall clearly demonstrate that impact to the CPS Critical Path has occurred resulting from the TIA.
6. The recommended guidelines that govern the Time Impact Analysis process can be found within AACE International Recommneded Practice no. 52R-06. “Time Impact Analysis – As Applied in Construction”, latest version.

PART 3 – EXECUTION

3.01 CONSTRUCTION PROGRESS SCHEDULE SUBMISSION AND REPORTING REQUIREMENTS TABLE:

A. The reports required by this section are to be prepared and submitted by the CONTRACTOR in accordance with Table 01 32 16-1 below.

Table 01 32 16-1: Table of Schedule Submittal Requirements

S No.	DESCRIPTION	SUBMITTED AT PRE-CON	SUBMITTED MONTHLY	SUBMITTED AS SPECIFIED
1.	Identification Scheduling personnel.	v		
2.	Baseline Construction Progress Schedule	5 days prior		
3.	Construction Progress Schedule Updates		v	
4.	Time Impact Analysis			v
5.	Revised Construction Schedules/ Recovery Schedules			v
6.	Schedule Narrative report	v	v	

.

END OF SECTION 01 32 16

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope

B. CONTRACTOR's Responsibilities

C. Categories of Submittals

D. Transmittal Procedure

E. Review Procedure

F. Effect of Review of CONTRACTOR's Submittals

1.02 RELATED SECTIONS

A. Project Meetings are included in Section 01 31 19.

1.03 SCOPE

A. Submittals covered by these requirements include manufacturers' information, shop drawings, test procedures, test results, samples, requests for substitutions, and miscellaneous work-related submittals.

B. Submittals shall also include, but not be limited to, all mechanical, electrical and electronic equipment and systems, materials, reinforcing steel, fabricated items, and piping and conduit details.

C. The CONTRACTOR shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's installation and other instructions as specifically required in the Contract Documents and as required by the CITY, to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the Contract Documents.

D. Where a Submittal is required by the Contract Documents, any related Work performed by CONTRACTOR prior to the CITY's review of the Submittal shall be at the sole expense and responsibility of CONTRACTOR.

1.04 CONTRACTOR's RESPONSIBILITIES

A. The CONTRACTOR shall be responsible for the accuracy and completeness of the information contained in each Submittal and shall assure that the material, equipment or method of work shall be as described in the Submittal. Data shown on the Submittal shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data. Samples shall be accompanied by sufficient information to identify the supplier and pertinent data such as catalog numbers.

B. As one of its initial submittals, to be provided one week after the notice of commencement, the CONTRACTOR shall completely review the specifications and prepare a Schedule of Submittals which provides a comprehensive list of required submittals, listing the required submittals by specification section. This list shall be submitted for approval, and once approved, will serve as the baseline for all ensuing submissions. The Schedule of Submittals shall be updated on a monthly basis with current status of each submittal and any proposed modifications to the submission schedule. Monthly updates shall be submitted along with the monthly schedule updates.

The following Preliminary Schedule of Submittals is a preliminary list of submittals that shall be reviewed and updated by the Contractor as applicable to this project and be submitted to the City in accordance with responsibilities of paragraph 1.04 B.

Preliminary Schedule of Submittals - **Conveyance Jobs**

Specification Reference	**Submittal**	**Due Date**	**Status**
SUBMITTALS (Prior to work at the site)			
Section 01 33 00 Submittals	Schedule of Submittals	Pre-Construction Meeting	
Section 01 14 00 Control of Work	Erosion Control Plan	Prior to work at the site	
Section 01 14 00 Control of Work	Contractor's Temporary Bypass Plan	Two Weeks following Notice of Award	
Section 01 14 00 Control of Work	Site Access Plan	Two Weeks following Notice of Award	
Section 01 26 00 Contract Considerations	Schedule of Values	Three days prior to Preconstruction Meeting	
Section 01 31 21 Site Safety Plan, Project Meetings 01 31 19	Site Safety Plan	Three days prior to Preconstruction Meeting	
Section 01 32 13 Construction Progress Schedule Baseline Schedule	Baseline Schedule	Three days prior to Preconstruction Meeting	

OTHER SUBMITTALS			
Section 01 14 00 Control of Work	Copies of property owner release (if needed)	Prior to working outside construction limits and wasting of construction materials	
Section 01 14 00 Control of Work	Maintenance of Traffic Plan	Prior to start of construction.	
Section 01 31 19 Project Meetings	Contractor Job Meeting Notes		
Section 01 32 13 Construction Progress Schedule	Construction Progress Schedule	Updated for each construction progress meeting.	
Section 01 33 00 Submittals	Shop drawings including sewer conduit, manholes, inlets, and connections.	Prior to delivery to project site	
Section 01 45 29 Testing Laboratory Services	Testing Results		
Section 01 71 23 Field Engineering	Contractor Daily Reports	Daily	
Section 01 78 39 Record Documents	Record Documents	At completion of Project	
Section 33 31 00 Sewer Pipe – 3.02	Video of Installed Sewers	Prior to substantial completion	

C. The CONTRACTOR shall verify that all features of all products identified in Submittals conform to the specified requirements.

D. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment, which are being submitted for review.

E. All extraneous materials shall be crossed out or otherwise obliterated from Submittals.

F. The CONTRACTOR shall ensure that there is no conflict with other Submittals and notify the CITY in each case where a Submittal may affect the Work of another CONTRACTOR or the CITY.

G. The CONTRACTOR shall coordinate Submittals with the Work so that the Work will not be delayed. CONTRACTOR shall 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.

H. The CONTRACTOR shall not proceed with Work related to a Submittal until the Submittal process is complete. This requires that Submittals for review and comment shall be returned from the CITY to

the CONTRACTOR with a cover sheet indicating "No Exceptions Taken" or "Make Corrections Noted."

I. The CONTRACTOR shall certify on each Submittal document that CONTRACTOR has reviewed the Submittal, verified field conditions, and complied with the Contract Documents. CONTRACTOR shall also determine and verify:

1. All field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers and similar information;
2. The suitability of all materials with respect to the intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work; and
3. All information relative to CONTRACTOR's means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

J. The CONTRACTOR may authorize in writing a material or equipment supplier to deal directly with the CITY with regard to a Submittal. These dealings shall be limited to interpretations of the Contract Documents to clarify and expedite the Work.

K. CONTRACTOR shall submit to the CITY all Operation and Maintenance manuals and related Product Data and Submittal information required in all applicable Specification Sections a minimum of three (3) weeks prior to arrival of delivered equipment to the Plant Site. No payment for equipment will be released to the CONTRACTOR until Operation and Maintenance manuals and other specified Product Data and Submittal information are received, and complete, based on the contract document requirements, by the CITY.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 CATEGORIES OF SUBMITTALS

A. GENERAL: Submittals fall into two (2) general categories; submittals for review and comment, and submittals which are primarily for information only. Submittals which are for information only are generally specified as PRODUCT DATA in Part 2 of applicable specification sections.

B. SUBMITTALS FOR REVIEW AND COMMENT: All submittals except where specified to be submitted as product data for information only shall be submitted by the CONTRACTOR to the CITY or the CITY's representative for review and comment.

C. SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY: Where specified, the CONTRACTOR shall furnish submittals (product data) to the CITY or the CITY's representative for Information only.

3.02 TRANSMITTAL PROCEDURE

A. GENERAL: In addition to the Contractor Submittal Cover Sheet, unless otherwise specified, Submittals regarding material and equipment shall be accompanied by O & M Transmittal Form in Reference Forms, specified in Section 01 33 19.

B. SUBMITTAL NUMBER: The submittal number shall be the spec section followed by a unique, sequentially assigned number, and shall be noted on the transmittal form accompanying each item submitted. Original Submittal numbers shall have the following format: "XX XX XX-Y"; where "Y" is the sequential number assigned by the CONTRACTOR. Resubmittals shall have the following format: "Y-Z"; where "Y" is the originally assigned Submittal number and "Z" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 33 31 00-1-B, for example, is the second resubmittal (hence the "B") of first submittal pertaining to Section 33 31 00.

C. DEVIATION FROM CONTRACT: If the CONTRACTOR proposes to provide material, equipment, or method of work which deviates from the Contract Documents, the CONTRACTOR shall indicate so under "deviations" on the transmittal form accompanying the Submittal copies.

D. SUBMITTAL COMPLETENESS: Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

E. DOCUMENT SUBMISSION. All Submittals shall be transmitted to CITY using e-Builder®, which will log and distribute submittals.

3.03 REVIEW PROCEDURE

A. GENERAL: Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the CONTRACTOR's judgment of their conformance to the specified requirements. Other features and characteristics are specified in a manner which enables the CONTRACTOR to determine acceptable options without Submittals. The review procedure is based on the CONTRACTOR's guarantee that all features and characteristics not requiring Submittals conform as specified. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the Contract Documents) or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions. When the Contract Documents require a Submittal, the CONTRACTOR shall submit the specified information as follows:

1. One (1) copy in electronic PDF format or an original copy shall be submitted to MSD. If requested by the CITY, the CONTRACTOR shall also submit one (1) CD containing the "native files" of electronic software used to generate the submittal.

B. SUBMITTALS FOR REVIEW AND COMMENT: Unless otherwise specified, within thirty five (35) calendar days after receipt of a Submittal for review and comment, the CITY or CITY's representative shall review the Submittal and return electronic copies reflecting all review comments. The reproducible original will be retained by the CITY. The returned Submittal shall indicate one of the following actions:

1. If the review indicates that the material, equipment or work method complies with the Contract Documents, Submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, the CONTRACTOR may begin to implement the Work method or incorporate the material or equipment covered by the Submittal.
2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED." The CONTRACTOR may begin implementing the work method or incorporating the material and equipment covered by the Submittal in accordance with the noted corrections. Where Submittal information will be incorporated in O&M data, a corrected copy shall be provided.
3. If the review reveals that the Submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the CONTRACTOR shall not undertake Work covered by this Submittal until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."
4. If the review indicates that the material, equipment, or work method does not comply with the Contract Documents, copies of the Submittal will be marked "REJECTED - SEE REMARKS." Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the CONTRACTOR shall not undertake the Work covered by such Submittals until a new Submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

C. SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY: Shall be provided as part of the Work under the Contract Documents and its acceptability determined under normal inspection procedures.

D. RESUBMITTAL PROCEDURES: CONTRACTOR shall make corrections required by the CITY or CITY's representative and shall return the required number of corrected copies of the Submittal to CITY for review. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by the CITY or CITY's representative on previous Submittals.

3.04 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

A. Review of Contract Documents, including the drawings, methods of work, or information regarding materials or equipment the CONTRACTOR proposes to provide, shall not relieve the CONTRACTOR of responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the CITY or the CITY's representative, or by any officer or employee thereof, and the CONTRACTOR shall have no claim under the Contract Documents on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed.

B. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the CITY has no objection to the CONTRACTOR, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

END OF SECTION 01 33 00

SECTION 01 33 19

REFERENCE FORMS INDEX

Form No.	Title
02 41 00	Salvage Equipment Turn-Over

SECTION 01 42 19

APPLICABLE CODES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

1.02 SCOPE

A. All materials, equipment, products and construction procedures used during the execution of the Contract Documents or incorporated in the Work shall comply with the latest provisions of applicable codes, regulations, and standards. A partial listing includes the following:

1. Ohio Basic Building Code.
2. Local Building Codes.
3. National Fire Codes.
4. Regulations and Standards of the Occupational Safety and Health Act (OSHA), of the U.S. Department of Labor, and of the State.
5. National Electrical Code.
6. Underwriter's Laboratories, Inc.
7. National Electrical Manufacturer's Association.
8. American National Standards Institute.
9. American Society for Testing Materials.
10. American Society of Heating, Refrigerating and Air Conditioning Engineers.
11. American Society of Mechanical Engineers.
12. Institute of Electrical and Electronics Engineers.
13. OSHA Part 1910 Subpart O, “Machinery and Machinery Guarding”
14. ANSI/ASME B15.1, “Safety Standard for Mechanical Power Transmission Apparatus”
15. ANSI/ASME B20.1, “Safety Standard for Conveyor and Related Equipment”
16. All other applicable codes, regulations listed in the Specifications, and standard of utility companies.

B. Specific provisions of codes, regulations and standards may be referenced in the Contract Documents to assist the CONTRACTOR and identify options selected for the design of the Project. Such references do not relieve the CONTRACTOR from compliance with other applicable provisions of the codes, regulations and standards not specifically referenced in the Contract Documents.

C. In case of discrepancy, applicable codes shall govern over the Contract Documents. The CONTRACTOR shall notify the CITY in writing of any discrepancy (ies) noted before proceeding with the related Work.

PART 2 - PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION 01 42 19

SECTION 01 45 29

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Description

C. Contractor’s Responsibilities.

D. Submittals

1.02 SCOPE

A. This section addresses the requirements and responsibilities of the CONTRACTOR and the CITY, with respect to testing laboratory services for materials used on the Project (the "Materials"). Drawings and general provisions of the Contract Documents, including General Conditions, Special Provisions, and other Division 1 Specification Sections.

1.03 DESCRIPTION

A. All Materials must conform to Work requirements in the Contract Documents. The CONTRACTOR has the obligation to demonstrate that all Materials conform to the requirements of the Contract Documents.

B. All Materials are subject to sampling, inspection and testing. CONTRACTOR shall provide and deliver, at no additional cost to the CITY, any samples needed for testing. Include samples in the Work if suitable and applicable.

C. CONTRACTOR shall submit Certification of Material Compliance for any Material before incorporating in the Work. Such certification shall include, at a minimum, the following:

1. Project Name.
2. Material Description.
3. Material Supplier including address, phone number and contact.
4. Intended use of Material.
5. Location and date of Material Production.
6. Applicable standards, tests and results thereof
7. Statements declaring the Material conforms to the Contract Requirements.

D. The CONTRACTOR shall obtain the services of an approved independent testing laboratory to

perform and report the tests listed below:

1. Concrete material and mix designs.
2. Grout material, masonry units, and mix designs.
3. Asphaltic concrete materials and mix designs.
4. Embedded, fill and backfill materials.
5. Repeat tests required because of the CONTRACTOR's negligence or nonperformance.
6. Tests made for the CONTRACTOR's convenience.

E. At the discretion of the CITY, the CITY will perform or obtain the services of a test laboratory to perform and report the tests listed below:

1. Bedding and backfill material analysis.
2. Soils compaction.
3. Concrete strength, slump and air content.

F. The CONTRACTOR shall pay for all testing listed in 1.04.D above. Repeat tests requested by the CITY which do not indicate the CONTRACTOR's negligence or noncompliance with requirements of the Contract Documents shall be paid for by the CITY.

G. The testing laboratory shall be acceptable to CITY and shall be the same throughout the Project unless a change is requested in writing by the CONTRACTOR and approved by the CITY, or a change is requested in writing by the CITY.

H. Three (3) printed copies of all test reports shall be submitted to the CITY as soon as is practical following the completion of each test. Concurrently, one (1) additional copy of each test report shall be submitted electronically to the CITY in PDF format.

I. The testing laboratory shall be available to attend Project progress meetings when requested in order to provide their input and opinions regarding construction procedures or problems.

J. The testing laboratory is not authorized to approve or accept any portion of the Work; rescind, alter or augment the requirements of the Contract Documents; or perform any duties of the CONTRACTOR not outlined in this section.

K. The work of the testing laboratory shall in no way relieve the CONTRACTOR of any obligation to perform work in accord with the Contract Documents.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. The CONTRACTOR shall provide reasonable notice (at least 48 hours) to the CITY prior to expected time for any testing.

B. Cooperate with laboratory personnel; provide access to Work Site, processes and to manufacturer's operations.

C. Provide to laboratory, preliminary representative samples of Materials to be tested, in required quantities, and properly identified and dated.

D. Furnish copies of mill test reports.

E. Furnish labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Site.
3. To facilitate and coordinate inspections and tests.
4. For laboratory's exclusive use for storage and curing of test samples.
5. Forms for preparing concrete test beams and cylinders.

F. Notify laboratory and the CITY sufficiently in advance of testing operations to allow for assignment of personnel and scheduling of tests.

G. Arrange with laboratory and pay for, additional samples and tests required for CONTRACTOR's convenience.

1.05 SUBMITTALS

A. The CONTRACTOR shall furnish complete identification and qualification information to the CITY, for consideration of approval, regarding the proposed testing laboratory. Such information shall include current staffing, testing equipment, inventory and calibration data, and shall be sufficient to demonstrate the laboratory's ability to perform all tests required by the Contract Documents.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 45 29

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Description

C. Field Engineering.

1.02 SCOPE

A. This section addresses the requirements and responsibilities of the CONTRACTOR, with respect to onsite engineering tasks performed during performance of the Work.

1.03 DESCRIPTION

A. Field tests required by this Section are additional to the start-up and field test services required elsewhere in the Contract Documents.

1.04 FIELD ENGINEERING

A. CONTRACTOR shall employ and retain at the Site of the Work a field engineer capable of performing all engineering tasks required of the CONTRACTOR. Engineering tasks shall include:

1. Daily reports submitted each day with all required information including: numbers of employees, subcontractor employees, breakdown of employees by trade, major equipment and materials installed, major construction equipment utilized, location of all Work areas and materials and equipment received.
2. Maintain field office files and drawings, record drawings, and coordinate engineering services with subcontractors. Prepare layout and coordination drawings for construction purposes.
3. Review and coordinate work for conflicts and interferences and immediately advise the CITY of all discrepancies noted.
4. Cooperate and participate with the CITY in field inspections as required and requested.
5. Note the location of all field tile, utilities and other underground structures on a field set of drawings, to be shown on the as-built drawings.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 71 23

SECTION 01 71 33

RESTORATION OF IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Structures and Facilities.

B. Roads, Streets, and Other Paved Surfaces.

C. Cultivated Areas and Other Surface Improvements.

1.02 RELATED SECTIONS

A. Submittals are included in Section 01 33 00.

1.03 STRUCTURES AND FACILITIES

A. The CONTRACTOR shall take all precautions necessary to protect the integrity and usefulness of all existing facilities. The CONTRACTOR may, with the approval of the CITY, remove such existing structures, including but not limited to, curbs, gutters, conduits, pipelines, vaults, manholes, cables and conduits and poles as may be necessary for the performance of the Work, and shall re-build the structures thus removed in as good a condition as found in accordance with the regulatory requirements and the Contract Documents. The CONTRACTOR shall also repair existing structures which may be damaged as a result of the Work under the Contract Documents as nearly as possible to the original condition, to the satisfaction of the owner.

1.04 ROADS, STREETS, AND OTHER PAVED SURFACES

A. Unless otherwise specified, roads and streets in which the surface is removed, broken, or damaged during the Work under the Contract Documents, shall be resurfaced and brought to the original grade and section. Roadways used by the CONTRACTOR shall be cleaned and repaired. Before resurfacing material is placed, edges of pavements shall be trimmed back far enough to provide clean, solid, vertical faces, and shall be free of loose material. All paved surfaces shall be cut with a pavement saw. Rough cuts are not allowed. The entire block of damaged sidewalks and driveways shall be replaced.Repair work shall conform to the provisions of the Governing Agency, applicable specifications in Part 3 of this section and as directed by the CITY.

1.05 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Cultivated or planted areas and other surface improvements which are damaged by actions of the CONTRACTOR shall be restored as nearly as possible to their original condition.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 INSTALLATION

A. All restoration shall be completed in strict accordance with the appropriate items of the Specifications, as directed by the CITY. All disturbed areas shall be restored as nearly as practical to the condition they were prior to construction within thirty (30) days of pipe installation, at the direction of the CITY. All drainage ditches disturbed by the CONTRACTOR's Work shall be restored, reshaped, and graded to drain properly. Sod, erosion control mats, or other methods shall be used by the CONTRACTOR to ensure that drainage ditches are restored to the pre-construction condition as much as practical.

B. Pavement restoration shall be in accordance with the "Typical Restoration Section" on the Drawings and provisions of the Governing Agency responsible for the particular road, as directed by the CITY.

C. The restoration of sunken trenches shall be the CONTRACTOR's responsibility. Sunken areas shall be backfilled and compacted to meet adjoining grades and the surface area reseeded, or resurfaced with asphalt or concrete matching the existing surface. The CONTRACTOR's responsibility for this item shall be under the terms of, and for the duration of, the guarantee defined in Section 00 72 00 General Conditions, Article 13.07 "Correction Period".

D. The CONTRACTOR shall restore unpaved areas by seeding and mulching in accordance with Item 659 of the Ohio Department of Transportation Construction and Material Specifications (ODOT CMS) unless otherwise noted herein. Commercial fertilizer shall be used and shall have a chemical analysis of 10-20-10. The fertilizer shall be delivered to the Project Site in manufacturer's containers, unopened. The container, or an attached tag, shall have printed upon it the manufacturer's name and the chemical analysis of the contents.

E. All maintained yards shall be restored with shredded topsoil and fertilizer prior to seeding and mulching, in accordance with Item 659 of the ODOT CMS. Shredded topsoil is soil that has been run through a shredding machine to break up the lumps and make it easy to work with and rake out. CONTRACTOR shall remove all stones 1-inch and greater in any dimension. Shredded topsoil shall be placed in loose lifts that construct a 4-inch compacted depth. Grass seed shall be twenty percent (20%) Annual Ryegrass and eighty percent (80%) Finelawn Fescue. Mulch mats or other methods shall be employed to ensure that slopes are properly restored, with any staples or nails removed once the grass has sufficiently rooted to stabilize the slope.

F. When restoration is performed in the summer months of June, July, and August the CONTRACTOR shall utilize temporary mulching and seeding. Temporary mulching shall then be removed as necessary, with final seeding and mulching performed September 1 through September 15.

G. All driveways shall be constructed in kind in accordance with Item 627 of the City Supplement to ODOT CMS.

H. Concrete walks shall be restored with a five (5) inch thick Plain Portland Cement Concrete Walk (Item 608).

I. The cost of all restoration of streets, drives, walks, sod, curbs, etc., shall be included in the various items of the Contract Documents. When restoring walks, curb ramps shall be constructed at intersections where the existing walk has been disturbed. Contact the jurisdictional agency for curb ramp requirements.

END OF SECTION 01 71 33

SECTION 01 74 00

CLEANING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

1.02 SCOPE

A. CONTRACTOR shall keep the premises free from accumulations of waste materials and rubbish at all times. CONTRACTOR shall provide adequate trash receptacles about the Site and shall promptly empty the containers when filled, or as directed by the CITY.

B. Construction materials such as concrete forms and timbering shall be neatly stacked by CONTRACTOR when not in use. CONTRACTOR shall promptly remove splattered concrete, asphalt, oil, paint, corrosives, or cleaning solutions from surfaces to prevent marring or other damage.

C. Wastes shall not be buried or burned on the Site, nor disposed of into storm drains, sanitary sewers, streams or waterways. All wastes shall be removed from the Site and disposed of in a manner complying with local ordinances and laws.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide all required personnel, equipment, and materials needed to maintain cleanliness.

B. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as reviewed by the CITY.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

A. General: Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials. Do not allow the accumulation of scrap, debris, waste material, and other items not required for performance of the Work. Provide adequate storage for all items awaiting removal from job Site, observing all requirements for fire protection and protection of the environment.

3.02 FINAL CLEANING

A. General: Prior to Final Completion of the Work, remove from the job Site all tools, surplus materials, equipment, scrap, debris and waste.

B. Site: Unless otherwise specifically directed by the CITY, broom clean all paved areas on the Site and all public paved areas directly adjacent to the Site. Completely remove all resultant debris.

C. Timing: Schedule final cleaning as approved by the CITY to enable the CITY to accept a completely clean Project.

END OF SECTION 01 74 00

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 SECTIONS INCLUDES

A. Closeout Procedures.

1.02 RELATED SECTIONS

A. Substantial Completion is included in Section 01 77 19.

B. Record Documents are included in Section 01 78 39.

1.03 CLOSEOUT PROCEDURES

A. Upon Substantial Completion, as determined in accordance with section 01 77 19 of the specifications, the CITY will issue to the CONTRACTOR a written punch list of minor work required as a condition of final completion. The CITY's punch list will stipulate a reasonable time, if different than 30 days, to complete the required work. **Failure of the CONTRACTOR to complete the punch list items by the stipulated term, normally 30 days, will result in an administrative fee of $100 per calendar day for every day beyond the stipulated period the punch list work remains incomplete.**

B. CONTRACTOR shall submit written certification that Contract Documents have been reviewed, Work has been inspected and that Work is complete in accordance with Contract Documents and ready for CITY inspection. The CITY will inspect the improvement, and if items remain which the CONTRACTOR must complete or remedy, perform the work immediately. When the CONTRACTOR corrects such items, the CITY will make final inspection. The work must pass final inspection before the CITY will accept it.

C. Provide submittals to the CITY or the CITY's representative that are required by governing or other authorities.

D. Submit Application for Final Payment, in accordance with article 14.07 of section 00 72 00 General Conditions. Application for Final Payment shall include all Record Documents in accordance with section 01 78 39 of the specifications, and identify total adjusted Contract Sum, previous payments and sum remaining due.

E. CONTRACTOR shall repair defective land, areas, or Work during the Correction Period in accordance with article 13.07 of section 00 72 00 General Conditions and as stipulated in Contract Documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION 01 77 00

SECTION 01 77 19

SUBSTANTIAL COMPLETION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Scope.

B. Partial Utilization.

C. Final Completion

1.02 RELATED SECTIONS

A. Summary of Project is included in Section 01 11 00.

B. Cleaning is included in Section 01 74 00.

C. Measurement and Payment is included in Section 01 20 00.

D. Contract Closeout is included in Section 01 77 00.

E. Record Documents 01 78 39.

F. Time for Completion and Liquidated Damages are included in Division 0.

G. Manufacturer Product Warranties 01 78 36

H. (If applicable to contract, include Sections 01 75 01 through 01 75 06)

1.03 SCOPE

1. 45 calendar days prior to the when the CONTRACTOR considers the Work ready for its intended use, CONTRACTOR shall, in ebuilder, certify that the Work will be substantially complete 45 days from the date of the request as defined below and request that CITY issue a Certificate of Substantial Completion. Within fourteen (14) calendar days after receipt of such notice from the CONTRACTOR, CITY and the CONTRACTOR shall make an inspection of the Work to determine the status of the Work. If CITY does not consider the Work substantially complete, CONTRACTOR will be notified in writing giving reasons, therefore. If CITY considers the Work substantially complete, a Certificate of Substantial Completion will be prepared by the CITY which shall fix the date of Substantial Completion. There shall be attached to the Certificate of Substantial Completion a final list of items to be completed or corrected before Final Completion and final payment. If appropriate, CITY will deliver to the CONTRACTOR a written recommendation as to division of responsibilities pending final payment between CITY and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance.

2. The Contractor shall submit the following pertinent documentation with the request for Substantial Completion.

a. Startup and Testing Reports including the Commissioning Reliability Test Report

b. O&M manuals

c. Preliminary Record Drawings. Approved set by Final Completion.

d. Required training and completion dates

e. Warranties

f. Video tape of installed sewers and other testing results

g. Delivery of Spare Parts

B. *Substantial Completion* is the completion of construction and installation of equipment such that the system may be placed in full operation and will both function and perform as designed. This specifically includes all control systems, instrumentation and all residual handling systems.

The inspection to verify Substantial Completion shall include, but not be limited to:

1. All Work performed under the original Contract Documents and any additional Work performed in accordance with approved changes to the Contract Documents.
2. All equipment and systems tested and shown operational in the presence of the CITY and/or the CITY's designated representatives.

CITY shall have the right to exclude items from the Work after the date of Substantial Completion, but CITY shall allow CONTRACTOR reasonable access to complete or correct items on the list attached to the Certificate of Substantial Completion. CONTRACTOR shall also have reasonable access to make corrections during the one (1) year Correction Period in accordance with Paragraph 13.07 of the General Conditions included in the Contract Documents.

1.04 PARTIAL UTILIZATION

A. Prior to Substantial Completion of all the Work, CITY may request CONTRACTOR in writing to permit CITY to use a specified part of the Work that CITY believes to be substantially complete and which may be used without significant interference with Work on the other parts of the Project. If CONTRACTOR agrees, it shall certify to CITY that said part of the Work is substantially complete and request CITY to issue a Certificate of Substantial Completion for that part of the Work. Within fourteen (14) calendar

B. days of this request by the CONTRACTOR, the CITY and CONTRACTOR shall inspect that part of the Work to determine its status of completion and shall issue a Certificate of Substantial Completion for that portion of the Work as described in Paragraph 1.03.A.1

above.

C. In lieu of the issuance of a Certificate of Substantial Completion as to part of the Work, CITY may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functional and separately useable; provided that prior to any such take over, the CITY and CONTRACTOR have agreed as to the division of responsibilities for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility. The correction period, described in Article 13.07 of the General Conditions, shall be interrupted if the equipment is out of service for repairs during the correction period.

1.05 FINAL COMPLETION

A. Final completion occurs at a point in time after Substantial Completion has been attained. At Final Completion all Work outstanding at Substantial Completion has been satisfied; all punch list items have been satisfactorily completed to the City's requirements; and all restoration, seeding, final cleaning, and site demobilization have occurred.

B. At Final Completion, all closeout submittals, final adjustment of accounts, and the final payment request have been submitted and approved in accordance with Section 01 77 00 Contract Closeout.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 EQUIPMENT CHECKLIST (NOT USED)

3.02 INSPECTION

A. If the Substantial Completion inspection by CITY and CONTRACTOR confirms that the Work is substantially complete, the CITY or the CITY's representative shall:

1. Prepare and submit to the CONTRACTOR a list of items (punch list) to be completed or corrected, as determined by the Substantial Completion inspection, along with the designated timeframe for completion.
2. Prepare and issue a Certificate of Substantial Completion, containing:
    a. The date of Substantial Completion.
    b. A list of items (punch list) to be completed or corrected by the CONTRACTOR.
    c. The timeframe within which the CONTRACTOR shall complete or correct the list of items (punch list).
    d. The time and date the CITY will take possession of the Work or designated portion thereof.
    e. The responsibilities of the CONTRACTOR for:

1) Operation of mechanical, electrical, and other systems.
2) Maintenance and cleaning.
3) Security.

f. The signature of the:

1) CITY
2) CONTRACTOR

3.03 FINAL COMPLETION CHECKLIST (NOT USED)

END OF SECTION 01 77 19

SECTION 01 78 39

RECORD DOCUMENTS

PART 1 - GENERAL.

1.01 SECTION INCLUDES

A. Scope.

B. Description.

1.02 RELATED SECTIONS

A. Contract Closeout is included in Section 01 77 00.

1.03 SCOPE

A. This section addresses the requirements and responsibilities of the CONTRACTOR, with respect to record documents to be maintained in the field by the CONTRACTOR. Drawings and general provisions of the Contract Documents, including General Conditions, and Division 1 Specification Sections, including Section 01 35 00 – Special Provisions, apply to this Section.

1.04 DESCRIPTION

A. CONTRACTOR shall maintain and provide the CITY with record documents as specified as follows, except as otherwise specified or modified in Divisions 2 through 48 of the Specifications.

B. Maintenance of Record Documents:
   1. Maintain in clean, dry legible condition the following: Contract Drawings, Specification, Addenda, Approved Shop Drawings and Submittals, Change Orders, other Modifications of Contract, Progress Meeting Minutes, Test Records, Survey Data, and all other documents pertinent to the Work of the CONTRACTOR (collectively referred to as the " Contractor Markup Documents").
   2. Provide for proper storage and easy access. File in accordance with filing format acceptable to the CITY.
   3. Make documents available at all times for inspection by the CITY.
   4. Contractor Markup Documents shall not be used for any other purpose and shall not be removed from the Project Site without the approval of the CITY.

C. Marking System: Provide and maintain colored pencils for making changes, revisions, additions and deletions, to the record set of Contract Drawings. Document and maintain a consistent color code.

D. Recording:
   1. Label each document " CONTRACTOR MARKUP" in 1 inch high printed letters.

2. Keep record documents current.
3. All pertinent and required information shall be collected and recorded before the related work becomes inaccessible.
4. Contract Drawings: Legibly mark to record actual Work including:
    a. Depths of various elements of foundation in relation to datum.
    b. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
    c. Location of internal utilities and appurtenances concealed in Work referenced to visible and accessible features of structure.
    d. Field verifications and changes of dimension and detail.
    e. Changes made by Change Order or Field Order.
    f. Pertinent details not on original Contract Drawings.
5. Specification and Addenda: Legibly mark up each Section to record:
    a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
    b. Changes made by Change Order or Field Order.
    c. Other installation additions or changes not originally specified.
6. Submittals: Maintain Submittals, including shop drawings, as Record Documents and legibly annotate drawings to record changes made after review and after installation.

E. Submittals:

1. The CITY may request incremental electronic scans of hardcopy (paper) preliminary Contractor Markup Documents.
2. At the Request for Substantial Completion, submit the Preliminary Contractor Markup Documents to the City in accordance with the requirements of Section 01 33 00. The Contractor shall add the following certification statement, “THIS SUBMITTAL HAS BEEN THOROUGHLY CHECKED FOR ACCURACY AND CONFORMANCE BEFORE BEING SUBMITTED, AND BEARS THE CONTRACTOR'S SIGNATURE OF APPROVAL CERTIFYING THAT THEY HAVE BEEN SO CHECKED.” Under this statement, a signature from an authorized party or individual representing the Contractor is required, along with the printed name and title of the person signing.
3. At completion of Project, submit Contractor Markup Documents to the CITY in accordance with the requirements of Section 01 33 00.
4. Accompany Submittal with transmittal letter containing:
    a. Date of Submittal.
    b. Project identification, including title, Project ID (Number), and sewer number (if applicable).
    c. CONTRACTOR's identification, including name and address.
    d. Title and document identification number for each Contractor Markup Document provided.
    5. A Certification that each Contractor Markup Document as submitted is complete and accurate shall be provided as follow: The Contractor shall add the following certification statement, “THIS SUBMITTAL HAS BEEN THOROUGHLY CHECKED FOR ACCURACY AND CONFORMANCE BEFORE BEING SUBMITTED, AND BEARS THE CONTRACTOR'S SIGNATURE OF APPROVAL CERTIFYING THAT THEY HAVE BEEN SO CHECKED.” Under this statement, a signature from an authorized party or individual representing the Contractor is required, along with the printed name and title of the person signing. If the Contractor utilized a Registered Professional (i.e.-Professional

Engineer or Surveyor) or other certified service or specialist to verify certain aspects of a project that are outside of the Contractor's expertise and/or ability to acquire the necessary data, a duplicate copy of the relevant document(s) shall be included with the Contractor Markup Documents that is prepared and separately certified by the responsible party, with the area of separated responsibilities clearly delineated and/or stated on both documents. If such an attachment is provided, it must include a certification statement similar to, "I CERTIFY THAT THE LOCATIONS, ELEVATIONS, DEPTHS, MATERIALS AND COMMENTS HEREON AND IN THE DESCRIBED AREA(S) REFLECT THE AS-BUILT VALUES AND CONDITIONS, ACCURATELY REFLECTING EXISTING FIELD CONDITIONS AS DETERMINED BY ME OR UNDER MY DIRECT SUPERVISION ON THIS DATE:" - followed by the date, signature, printed name, registration number or certification, Ohio professional seal (if applicable), and the company contact information.

a.

b. Signature of CONTRACTOR, or authorized representative.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 78 39

SECTION 02 41 13

DEMOLITION, SALVAGE, CUTTING, AND PATCHING

PART 1—GENERAL

1.01 DESCRIPTION

This section specifies demolition, salvage, cutting, and patching.

1.02 RELATED SECTIONS

A. Submittals Section 01 33 00

B. Construction Sequence 01 12 16

C. Restoration of Improvements 01 71 33

D. General Conditions Section 00 72 00: Article 4.06 Hazardous Environmental Conditions at Site, Article 6.14 Safety Representative, Article 6.15 Hazard Communication Program.

1.03 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00:

1. Plan for disposal for demolition debris and materials.

2. Salvage Equipment Turn-Over Form: Form No. 02 41 00

1.04 SALVAGE DISPOSITION, STORAGE, AND HANDLING

A. GENERAL:

The CONTRACTOR shall salvage items, designated for CITY salvage, as a unit. Removal of salvaged equipment shall be done in a manner that protects adjacent equipment and piping. Clean, list, and tag for storage. Protect from damage and deliver to locations designated by the ENGINEER. Salvage each item with auxiliary systems or associated equipment required for operation.

The CONTRACTOR shall Not salvage any items for turnover to CITY until the CITY receives the Contractor signed Salvage Equipment Turn-Over Form: Form No. 02 41 00. The City shall prepare the Salvage Equipment Turn-Over Form for Contractors signature of acknowledgement. Contractor must submit the signed form to CITY as a Construction Submittal in accordance with Submittals Section 01 33 00 prior to starting salvage work.

B. ITEMS DESIGNATED FOR SALVAGE:

Items designated for salvage to CITY are identified in table below. These items shall be removed, cleaned, labeled and delivered to a location to be designated by the ENGINEER.

Camargo Canyon Pump Station - CITY SALVAGE LIST	
ITEM	EXISTING LOCATION
RTU Panel (SCADA)	Existing Camargo Canyon Pump Station
Power Panel	Existing Camargo Canyon Pump Station
Electrical Relays	Existing Camargo Canyon Pump Station

C. DISPOSAL:

Dispose of items or materials not designated for the CITY'S salvage or reuse. Promptly remove from site. Do not store or sell CONTRACTOR salvaged items or materials on site.

PART 2—MATERIALS & PERFORMANCE REQUIREMENTS

A. Comply with ODOT Item 202, the City Supplement, and this Section, unless otherwise noted on the plans or directed by the CITY.

B. Compacted granular fill (No. 304 aggregate or CITY approved equal) or Controlled Low Strength Mortar (CLSM).

C. Accurately show locations of abandoned utilities or subsurface obstructions remaining on site on as-built record drawings.

PART 3--EXECUTION

3.01 GENERAL

The CONTRACTOR shall notify the ENGINEER prior to beginning any salvage work so that the proper salvage items are verified and the condition of the salvage item and adjacent equipment, piping, and structures can be documented. The ENGINEER may elect to have any items on the salvage list removed and disposed of by the CONTRACTOR, rather than being salvaged.

3.02 OPERATION PROCEDURES

Start and complete work in order of precedence as established by Section 01 12 16 and the approved schedule. Operational procedures and sequence of work are optional with CONTRACTOR, provided they do not infringe upon or violate schedule.

Execute work to protect occupants from injury and discomfort. Provide protection to persons and property. Conduct operations to ensure minimum interference with roads, walks, entrances, exits, and other adjacent occupied facilities.

Where temporary partitions are required in plant staff or public areas, construct partitions of clean, painted, minimum 1/2-inch (12 mm) thick, plywood.

Provide covered passageways where necessary to ensure safe passage of persons in or near areas of work. Provide substantial barricades and safety lights as required. Provide temporary dust-proof partitions where indicated or necessary to prevent infiltration of dust into occupied areas. Provide temporary weather protection as necessary to prevent damage to existing facilities and discomfort to persons in occupied areas.

3.03 CUTTING AND REMOVAL

Neatly cut and remove materials, and prepare all openings to receive new work.

Remove masonry or concrete in small sections.

Provide shoring, bracing, and other supports to prevent movement, settlement, or collapse of remaining or adjacent wall areas, structure, or facilities. Arrange shoring, bracing, and supports to prevent overloading of structure.

Take all precautions necessary to prevent damage to existing remaining work or to adjacent facilities. Execute work using methods which will prevent interference with use of remaining and adjacent facilities by the CITY.

Salvaged items shall be properly disconnected to retain their full salvage value, removed from their foundations and carefully stored at a location on the plant site as directed by the ENGINEER.

3.04 UTILITIES

Determine whether there are utilities in demolition areas that are needed for continued service to other facilities. Relocate, test and make functional such utilities before demolition work begins.

Notify ENGINEER of utilities that must be turned off before isolation and demolition are started. Utilities serving facilities to be demolished shall be isolated as directed by the ENGINEER. Isolation shall occur at a point closest to the remaining active portion of the utility.

3.05 MATCHING AND PATCHING

Where items are removed from existing walls, ceilings, floors, or partitions to remain, CONTRACTOR shall repair wall, ceiling, floor, or partition disturbed by removal.

Where walls, ceilings, floors, or partitions are removed, CONTRACTOR shall repair abutting walls, ceilings, or floors disturbed by removal.

Where existing construction is cut or otherwise disturbed to permit installation of new work, CONTRACTOR shall match and patch existing disturbed construction.

Use methods and materials similar in appearance, and equal in quality to areas or surfaces being repaired. See Section 09 91 00 for repairing coated surfaces damaged by the work.

Methods, materials, and finished work are subject to review and approval by the ENGINEER.

Remove areas, surfaces, or items which cannot be satisfactorily matched and patched. Replace at no additional expense to the CITY.

Unless otherwise called for on the plans; all equipment bases and pads are also to be removed where the equipment is shown or otherwise called to be removed on the drawings or in the specifications.

3.06 CLEANUP

Cleanup of demolition activities shall be performed in accordance with Section 01 71 33.

3.07 ABANDON EXISTING PIPELINES

Pipe lines that are designated to be abandoned shall be plugged or sealed. Pipe less than 1-inch diameter shall be sealed by grouting unless otherwise shown on the drawings. Pipe between 1-inch and 6-inches shall be sealed by the installation of a mechanical plug a distance of either two inches or equal to the diameter of the pipe whichever is greater, and grouted flush using a non-shrink, non-metallic grout. Pipe less than 12-inches but greater than 6-inches in diameter shall be sealed by the installation of a suitable precast concrete or vitrified clay stopper, properly cemented into place.

Pipe 12-inches and larger shall be filled, sealed, and abandoned in accordance with the method described in Section 202.041 of the Cincinnati Supplement to the State of Ohio, Department of Transportation, Construction and Material Specification. The material used for filling the existing pipe shall be Controlled Density Fill, when the pipe is located in pavement areas.

3.08 OPERATION OF EXISTING CAMARGO CANYON PUMP STATION

A. The CONTRACTOR shall perform all work in a manner so that MSDGC can keep the existing Camargo Canyon Pump Station in continuous dependable operation until the proposed sewer is ready to accept flow.

B. Temporary pumping at the existing pump station site may be required during construction in order to avoid raw sewage bypasses.

C. The CONTRACTOR shall furnish and operate any temporary pumping equipment required to maintain the wastewater flow around the construction operations so that pumping will be continuous and not out of service.

D. The CONTRACTOR shall notify MSD-Inspector a minimum of (72) hours before the temporary pumping equipment is to be started. This is needed so the inspector can notify the Supervisor of Maintenance of this Pump Station of this change. The contact at the Pump Station Group is Mr. Rick Meade. His phone number is 513-557-5947.

E. The CONTRACTOR shall have an employee on call 24 hours per day if an electrical pump system is used for raw sewage pumping to assure that no bypasses will occur due to

plugging or circuit failure. If an engine powered pump system is utilized, an employee must be in attendance 24 hours a day, unless approved by the CITY.

F. CONTRACTOR shall inform the MSD Supervisor of Maintenance if contractor's equipment fails leading to wastewater bypass event of sewage or SBU (Sewer Back Up) report from homeowners near pump station. Contact must be made within 24 hours.

G. CONTRACTOR shall install (auto dialer system) to report equipment failure. CONTRACTOR shall report any equipment failures leading to down time of pumping operation or bypass events of sewage

H. Power to electric motor driven pumps shall be paid for by the CITY. Fuel for engine driven pumps shall be provided by the CONTRACTOR (including fuel and delivery charges). Temporary wiring, piping and circuit protection shall be the responsibility of the CONTRACTOR.

I. The CONTRACTOR shall keep the CITY informed of any work which will interfere with the operation of the pump station. Any necessary shut-down of the facility shall be scheduled in advance with the CITY. All shut-down periods shall be scheduled so that the capacity requirements of the facility can be maintained. The CITY shall have the authority to order work stopped or prohibited which would, in the CITY's opinion, unreasonably result in stopping the necessary function of the pumping station.

J. Whenever it is necessary during the period of construction to shut-down the facility, the CONTRACTOR shall be required to make every effort to minimize the time any unit is out of service. When all equipment, labor and materials necessary to begin and complete the work required during the shut-down time are on-site and ready, the shut-down period may commence. The CONTRACTOR shall give the CITY a minimum of 72 hours notice when the work requires shut-down of the pumping station.

K. CONTRACTOR shall inform the MSDCG Supervisor of Maintenance 24 hours before shutdown equipment to prevent emergency response of Pump Station Staff to power loss alarms.

L. The CITY reserves the right to determine the exact time of shut-down and may determine that the work will have to be performed on a Sunday, holiday or at night, at no additional cost to the CITY.

M. The operation of all equipment and valves owned by the CITY shall be performed by CITY.

3.09 PREPARATION

A. Provide, erect, and maintain temporary barriers and security devices.

B. CONTRACTOR shall remove all equipment, piping, electrical, and appurtenances. Material to be salvaged shall be thoroughly cleaned, inside and out, and left in a satisfactory operating condition and ready for new paint, and shall be delivered to the Mill Creek Treatment Plant and placed in storage as directed by the CITY. See Section 1.04 B: Items For

Salvage listing.

3.11 ABANDON AND SALVAGE EXISTING PUMP STATION

A. The existing Pump Station shall be removed and/or abandoned to the limits shown on the plans. See Section 1.04 B for list of items to be salvaged and delivered to the Mill Creek Treatment Plant.

B. Pumps salvaged shall be salvaged with entire set of electrical cables. If any of the cables are damaged or cut by the CONTRACTOR, the CONTRACTOR shall purchase new cables appropriate for the equipment and deliver to the CITY.

C. A demolition schedule shall be prepared by the CONTRACTOR and submitted to the CITY. The schedule shall include the proposed methods and sequence of operations and include coordination for shut-off, capping and continuation of utility services as required, together with details for dust and noise control protection.

D. The CONTRACTOR shall abandon the existing valve vault and wet well as per item 202.12 of the State of Ohio, Department of Transportation, Construction and Material Specifications and City Supplement, thereto.

E. In lieu of totally removing the entire concrete structures, the Contractor may cut and remove the top sections to a point three (3) feet below the finished grade. The bottom of each structure shall be punctured sufficiently with 3 to 4 inch diameter holes to provide adequate drainage prior to abandonment. Inspection by CITY will determine the location and amount of holes needed in each tank. Concrete pavement shall be broken-up and removed.

F. The demolition of the existing Pumping Station will include removal of the old power service, power pole.

G. As soon as demolition work has been completed and approved by the Engineer, filling shall be performed. Final grading of the site shall meet with the existing surrounding grade and graded to drain naturally.

H. Do not burn or bury materials on site. Leave site in clean condition.

I. NOTE: Entrance into the wet well and other portions of the pump station shall be considered a confined space entry and shall be treated as such according to OSHA's Regulation 29CFR-1910.14-6.

END OF SECTION

SECTION 31 23 00

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SCOPE

A. This section covers preparation of the site; removal and disposal of all debris; excavation and trenching; the handling, storage, transportation, and disposal of all excavated material; all necessary sheeting, shoring, and protection of work; preparation of subgrades; pumping and dewatering as necessary; protection of adjacent property; backfilling; pipe embedment; surfacing and grading; and other appurtenant work.

1.02 GENERAL

A. With reference to the terms and conditions of the construction standards for excavations set forth in OSHA "Safety and Health Regulations for Construction", Chapter XVII of Title 29, CFR, Part 1926, CONTRACTOR shall employ a competent person and, when necessary based on the regulations, a registered Professional Engineer, to act upon all pertinent matters of the work of this section.

B. All backfill operations shall be in accordance with the City of Cincinnati Supplement to the State of Ohio (ODOT) Construction and Material Specifications, as shown on MSD Standard Drawing Acc. No. 49032, except as otherwise noted herein. All requirements of these items shall be strictly adhered to by the CONTRACTOR and enforced by the CITY.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Controlled Low Strength Material (CLSM) as specified herein above the "initial backfill" shall be required in the following locations:

1. Where the trench parallels a road or street pavement and any part of the trench is within three (3) feet of the edge of the pavement, CLSM shall be used and shall extend to the pavement subgrade or to the topsoil for the entire width of the trench.
2. Where the trench is located anywhere in the right of way or any part of the trench is within two feet of the outside edge a Right-of-Way, CLSM shall be used and shall extend to the pavement subgrade or to the topsoil for the entire width of the trench.

B. Compacted bank run gravel backfill, meeting the requirements of Section 703.20 of the City supplement and MSD Standard Drawing 49032, above the “initial backfill” shall be required for all conduits and trenches under sidewalks, driveway and parking lot pavements, when CLSM is not required as specified above.

C. Costs for backfilling, meeting the above requirements, shall be included in the price bid for all Types of conduit specified on the contract plans.

D. CLSM shall meet or exceed the requirements as defined in the latest edition of the "Rules and Regulations of the Office of the County Engineer Governing Driveway Regulations and Pavement and/or Right-of-Way Opening Provisions for the Unincorporated Area of Hamilton County", including addendums and attachments thereto.

E. Bedding, Initial Backfill and Minimum Trench Width for Plastic Pipes

1. Allowable bedding and initial backfill for plastic pipe shall be Class I or Class II as defined below and applied as per MSD Standard Drawing Accession Number 49032 requirements.

a. Class I –Angular ¼ inch to 1inch graded stone (No. 57), including a number of fill materials such as slag, cinders and crushed stone. Where any ungraded (one size aggregated) crushed stone or slag is used, limit size to 3/4 inch maximum. Use this material where the depth of cover of the conduit is between fourteen (14) feet and thirty-five (35) feet.

b. Class II – Coarse sands and gravels with maximum particle size of 1 inch, including various graded sands and gravels containing small percentages of fines, generally being granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class as further defined in ASTM-D-2487. Use of this material is applicable to conduits when the depth of cover is fourteen (14) feet or less.

c. Minimum trench width shall be not less than the greater of either the pipe outside diameter plus 16 in. (400 mm) or the pipe outside diameter times 1.25, plus 12 in. (300 mm) and as further refined in ASTM D-2321.

2.02 MATERIALS TESTING

A. Preliminary Review of Materials

1. As required by CITY, all tests for preliminary review of materials shall be made by an acceptable independent testing laboratory at the expense of CONTRACTOR. Two initial gradation tests shall be made for each type of embedment, fill, backfill, or other material, and one additional gradation test shall be made for each additional five-hundred (500) tons of each material delivered to the site. In addition, one set of initial Atterberg Limits test shall be made for each fill materials containing more than twenty (20) percent by weight passing the No. 200 sieve. One additional Atterberg Limits test shall be made or each additional five-hundred (500) tons of each material delivered to the site.

PART 3 - EXECUTION

3.01 CLEARING AND GRUBBING

A. Clearing and Grubbing shall be performed as specified in the bid item description in section 01 20 00 "Measurement and Payment."

3.02 EXCAVATION

A. Excavations shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.

B. Subgrade surfaces shall be clean and free of loose material of any kind when concrete is placed thereon.

C. Except where exterior surfaces are specified to be damp-proofed, monolithic concrete manholes and other concrete structures or parts thereof, which do not have footings that extend beyond the outside face of exterior walls, may be placed directly against excavation faces without the use of outer forms, provided that such faces are stable.

D. Classification of Excavated Materials.

1. No classification of excavated materials will be made for payment purposes. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the work, regardless of the type, character, composition, or condition thereof.

E. Blasting

1. Blasting or other use of explosives for excavation will not be permitted.

F. Dewatering

1. Dewatering equipment shall be provided to remove and dispose of all surface water and groundwater entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.
2. All excavations for concrete structures or trenches which extend down to or below groundwater shall be dewatered by lowering and keeping the groundwater beneath such excavations.
3. Surface water shall be diverted or otherwise prevented from entering excavations or trenches to the greatest extent possible without causing damage to adjacent property.
4. CONTRACTOR shall be responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipe or conduit shall be left clean and free of sediment.
5. CONTRACTOR shall obtain from the appropriate agencies and authorities, the dewatering and stormwater discharge permits required to remove and dispose of groundwater, surface water, and any other water used in CONTRACTOR's operations. The permits shall be obtained prior to start of construction. CONTRACTOR shall comply with applicable laws and regulations, including but not limited to the requirement that if CONTRACTOR has the capacity to withdraw water at a quantity greater than 100,000 gallons per day the CONTRACTOR shall register with the Ohio Department of Natural Resources (ODNR), Division of Water and then track and report on how much water was pumped. (Ohio Revised Code 1521.16)

G. Sheeting and Shoring

1. Except where banks are cut back on a stable slope or other effective trench support is provided, excavations for structures and trenches shall be supported with shoring as necessary to prevent caving or sliding.

2. Sheet piling or other excavation support systems shall be installed as necessary to limit the extent of excavations for deeper structures and to protect adjacent structures and facilities from damage due to excavation and subsequent construction. CONTRACTOR shall assume complete responsibility for, and shall install adequate protection systems for prevention of damage to existing facilities
3. Sheeting, shoring and excavation support systems shall met all applicable OSHA (Occupational Safety & Health Administration) requirements.
4. Trench sheeting may be removed if the pipe strength is sufficient to carry trench loads based on trench width to the back of sheeting. Trench sheeting shall not be pulled after backfilling. Where trench sheeting is left in place, it shall not be braced against the pipe, but shall be supported in a manner which will preclude concentrated loads or horizontal thrusts on the pipe. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment has been completed. Trench sheeting shall be removed unless otherwise permitted by CITY. Trench sheeting will not be removed, if in the opinion of CITY, removal of the sheeting will cause damage to the facility it is protecting. If left in place, the sheeting shall be cut off 12 inches below finished grade. The design of the support system shall be such as to permit complete removal while maintaining safety and stability at all times.

H. Stabilization

1. Sub-grades for concrete structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workers.
2. Sub-grades for concrete structures or trench bottoms which are otherwise solid, but which become mucky on top due to construction operations, shall be reinforced with crushed rock or gravel as specified for granular fills. The stabilizing material shall be placed in a manner that no voids remain in the granular fill. All excess granular fill with unfilled void space shall be removed. The finished elevation of stabilized sub-grades shall allow for installation of pipes, manholes, etc. to the elevations indicated on the drawings.

3.03 TRENCH EXCAVATION

A. No more trench shall be opened in advance of pipe laying than is necessary to expedite the work. One(1) block or four-hundred (400) feet, whichever is the shorter, shall be the maximum length of open trench on any line under construction.

B. Except where no dig methods are indicated on the drawings, is specified, or is permitted by CITY, all trench excavation shall be open cut from the surface and conform to MSD Standard Drawing 49032.

C. Alignment, Grade, and Minimum Cover

1. The alignment and grade or elevation of each pipeline shall be fixed and determined from offset stakes. Vertical and horizontal alignment of pipes, and the maximum joint deflection used in connection therewith, shall be in conformity with requirements of the section covering installation of pipe.

D. Fill Section

1. Where the sewer trench is in a fill section and the top of the pipe extends above the vertical limits of where the fill begins (portions of the trench backfill are in the constructed embankment) the CONTRACTOR shall refer to ODOT section 603 requirements, and City Supplement requirements thereto, for placement of the embankment fill prior to beginning the trench excavation.

E. Mechanical Excavation

1. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, or other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.
2. Mechanical equipment used for trench excavation shall be of a type, design, and construction, and shall be so operated, that the rough trench excavation bottom elevation can be controlled, and that trench alignment is such that pipe, wh
3. en accurately laid to specified alignment, will be centered in the trench with adequate sidewall clearance. Undercutting the trench sidewall to obtain sidewall clearance will not be permitted.
4. In locations where maximum trench widths are required for designated rigid conduits, mechanical equipment shall be operated so that uniform trench widths and vertical sidewalls are obtained at least from an elevation twelve (12) inches above the top of the installed pipe to the bottom of the trench.

F. Cutting Concrete Surface Construction

1. Cuts in concrete pavement and concrete base pavements shall be no larger than necessary to provide adequate working space for proper installation of pipe and appurtenances. Cutting shall be started with a concrete saw in a manner which will provide a clean groove at least one and one-half (1-1/2) inches deep along each side of the trench and along the perimeter of cuts for structures.
2. Concrete pavement and concrete base pavement over trenches excavated for pipelines shall be removed so that a shoulder not less than 6 inches in width at any point is left between the cut edge of the pavement and the top edge of the trench. Trench width at the bottom shall not be greater than at the top and no undercutting will be permitted. Pavement cuts shall be made to and between straight or accurately marked curved lines which, unless otherwise required, shall be parallel to the center line of the trench.
3. Pavement removal for connections to existing lines or structures shall not exceed the extent necessary for the installation.
4. Where the trench parallels the length of concrete walks, and the trench location is all or partially under the walk, the entire walk shall be removed and replaced. Where the trench crosses drives, walks, curbs, or other surface construction, the surface construction shall be removed and subsequently replaced between existing joints or between saw cuts as specified for pavement.

G. Excavation Below Pipe Sub-grade

1. Except where otherwise required, pipe trenches shall be excavated below the underside of the pipe, to provide for the installation of granular embedment.
2. Bell holes shall provide adequate clearance for tools and methods used for installing pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or granular embedment when the pipe is jointed.

H. Artificial Foundations in Trenches

1. Whenever unsuitable or unstable soil conditions are encountered, trenches shall be excavated below grade and the trench bottom shall be brought to grade with suitable material. In such cases, payment will be made under the applicable CONTINGENCY item or adjustments will be made in the Contract Price in accordance with the provisions of the General Conditions.

3.04 TRENCH EMBEDMENTS

A. Trench embedment materials both below and above the bottom of the pipe, classes of embedment to be used, and placement and compaction of embedment materials shall contain NO cinders, clay lumps, or other material which may cause pipe corrosion.

B. Groundwater Barrier

1. Continuity of embedment material shall be interrupted by low permeability groundwater barriers to impede passage of water through the embedment. Groundwater barriers for sewer lines that contain manholes with cast-in-place bases shall be compacted soil around each manhole, extending through any granular material beneath the manhole, and meeting ASTM D2487 soil classification GC, SC, CL, or ML-CL and shall be compacted to ninety-five (95) percent of maximum density at near the optimum moisture content (ASTM D698). Material may be finely divided, suitable job excavated material, free from stones, organic matter, and debris.
2. Groundwater barriers for sewer lines that contain manholes with precast (developed) bases and for all other pipelines shall be soil plugs of three (3) feet in width, extending the full depth and width of granular material, and spaced not more than four hundred (400) feet apart. The soil plugs shall be constructed from soil meeting ASTM D2487 classification GC, SC, CL, or ML, and compacted to ninety-five (95) percent of maximum density at near the optimum moisture content (ASTM D698).

3.05 BACKFILL INSTALLATION REQUIREMENTS

A. Compacted Backfill

1. Where CLSM is not required, compacted granular backfill for the full depth of sewer trench shall conform to requirements of MSD Standard Drawing Accession Number 49032, in the locations indicated below;
    a. Where beneath pavements, surfacings, driveways, curbs, gutters, walks, or other surface construction or structures.
    b. Where in street, road, or highway shoulders.

2. The top portion of backfill beneath established lawn areas shall be finished per section 01 71 33 “Restoration of Improvements”.
3. For backfilling in other areas than indicated in 1 above can consist of local site material with the following qualifications:
    a. No rocks, frozen lumps, or foreign mater and particle in excess of three (3) inches shall be included.
    b. Material does not consist of highly plastic silts, clays, organic silts or peat.
    c. No rubbish, muck or unsuitable materials are included, and any stones or shale of up to one-half cubic (0.5) foot in volume in the backfill are separated for each other and the pipe by at least six (6) inches of earth or approved site or select backfill.

B. Jetted Backfill

1. In lieu of compacting the bank run gravel backfill in four (4) inch lifts, the bank run gravel backfill may be compacted by thoroughly jetting with water, in areas outside of the right of way, provided satisfactory drainage and removal of the free water is provided.
2. The Bank Run Gravel backfill shall be consolidated by thoroughly jetting with water. For jetting, a hose not smaller than one and one-half (1-1/2) inch diameter and a nozzle not smaller than one (1) inch diameter and not shorter than two-thirds (2/3) the depth of the trench carrying a water pressure of forty (40) pounds per square inch (psi) shall be inserted in a uniform pattern, at five feet maximum spacing, to obtain maximum consolidation. After the final jetting of the trench, the backfill shall be left to settle and to permit drainage of impounded water. Typical jetting procedures shall include a water removal system at intervals not to exceed five hundred (500) lineal feet of trench. Water removal shall not begin until the water surfaces above the backfill. After jetting is complete, the area around the jetting hole shall be filled and compacted by the use of the bucket on the equipment used for excavating. Settled trench surfaces shall then be brought to grade by filling with Bank Run Gravel backfill and compacted to a density equal to that of the adjacent ground.
3. Water shall be removed by installing an opening in the manhole or installing a vertical eight-inch perforated pipe with filter paper adjacent to the manhole. If the vertical pipe method is used, the vertical pipe shall be filled with #57 (see ODOT specifications) stone after all water is removed by pumping. All manhole openings shall be plugged and sealed after jetting and water removal operations are completed.

C. Special Backfilling Requirements

1. Backfill material for Type "C" Conduit shall conform to BACKFILL Installation REQUIREMENTS – Items 3.05 A or B above..
2. The backfill for Type “C” Conduit shall be finally consolidated by mechanical compaction or by thoroughly jetting with water as specified above. If the backfill is finally consolidated by jetting, the CONTRACTOR shall assume all responsibility and associated costs for any ground or hillside movement and/or instability related to the jetting compaction procedures.
3. The CONTRACTOR shall include the cost for the necessary backfill and compaction with the various Conduit items in unit prices for various Conduit Class Items. No additional payment shall be made for the use of Controlled Low Strength Material (CLSM) Density Backfill when

required by the jurisdictional agency or due to unsupported trenches, over excavating, or the inability to properly compact the backfill in the excavated trench.

3.06 DRAINAGE MAINTENANCE

A. Trenches across roadways, driveways, walks, or other traffic ways adjacent to drainage ditches or watercourses shall not be backfilled prior to completion of backfilling the trench on the upstream side of the traffic way, to prevent impounding water after the pipe has been laid. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by CONTRACTOR. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. All material deposited in roadway ditches or other watercourses crossed by the line of trench shall be removed immediately after backfilling is completed, and the original section, grade and contours of ditches or watercourses shall be restored. Surface drainage shall not be obstructed longer than necessary.urs of ditches or watercourses shall be restored. Surface drainage shall not be obstructed longer than necessary.

3.07 PROTECTION OF TRENCH BACKFILL IN DRAINAGE COURSES.

A. Where trenches are constructed in ditches or other watercourses, backfill shall be protected from surface erosion. Where the grade of the ditch exceeds one (1) percent, or as otherwise required, ditch checks shall be installed. Unless otherwise indicated on the drawings, ditch checks shall be concrete. Ditch checks shall extend at least 2 feet below the original ditch or watercourse bottom for the full bottom width and at least 18 inches into the side slopes, and shall be at least 12 inches thick.

3.08 FINAL GRADING

A. After other outside work has been finished, and backfilling and embankments completed and settled, all areas which are to be graded shall be brought to existing grade and slope .

B. Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to manual methods. All surfaces shall be graded to secure effective drainage.

C. Final grades and surfaces shall be smooth, even, and free from clods and stones, weeds, brush, and other debris.

D. Seeding and other restoration activities shall comply with section 01 71 33 “Restoration of Improvements”.

3.09 DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. Disposal of excess material from other trench excavation sites shall be as follows. Except as otherwise permitted, all excess excavated materials shall be disposed of away from the site.

B. Broken concrete and other debris resulting from pavement or sidewalk removal, excavated rock in excess of the amount permitted to be installed in trench backfill, debris encountered in excavation work, and other similar waste materials shall be disposed of away from the site.

3.10 SETTLEMENT

A. CONTRACTOR shall be responsible for all settlement of trench backfill which may occur within the correction period stipulated in the General Conditions.

B. CONTRACTOR shall make, or cause to be made, all repairs or replacements made necessary by settlement within thirty (30) days after notice from CITY.

END OF SECTION 31 23 00

SECTION 31 70 00

TRENCHLESS PIPE INSTALLATION

PART 1 - GENERAL

1.01 SCOPE

A. Surface Disruption

B. Existing Utilities

C. Subsurface Conditions

D. Jack and Bore

E. Directional Drill

1.02 SURFACE DISTRUPTION

A. Unless otherwise noted in the Contract Documents, settlement or heave at the ground surface during and after construction shall not exceed one-half (1/2) inch unless otherwise specified as measured along the centerline of the conduit being installed.

1.03 EXISTING UTILITIES

A. Existing utilities are to be located in the field prior to construction, and shall be protected and/or relocated in accordance with the requirements of the CITY of the utility. Before any excavation is performed, CONTRACTOR shall call Ohio Utility Protection Service (OUPS) to have underground utilities located and marked. It shall be the CONTRACTOR's responsibility to verify utility locations and allow for their locations. The CONTRACTOR shall take all necessary precautions to protect the existing utilities and maintain uninterrupted service. Any damage done to utilities shall be immediately and completely repaired at the CONTRACTOR's expense.

B. When utilizing trenchless excavation methods, the CONTRACTOR must comply with the following requirements. Costs for this work shall be included with the applicable trenchless pipe installation bid item.

1. Expose and confirm all underground utility facilities at each crossing point by the proposed excavation to the installation depth of the new facility.

2. Expose all parallel underground utility facilities at the beginning and end of each trenchless excavation to the installation depth of the new facility. If the proposed alignment is within the tolerance zone of any parallel underground utility facility, the underground utility facility shall be exposed every one hundred feet.

3. Ensure that the final product installation maintains the proper clearances of existing underground utility facilities.

1.04 SUBSURFACE CONDITIONS

A. Geotechnical Investigations include:

Name	Prepared By	Date
Geotechnical Engineering Report	Resource International, Inc.	June, 2021
Electrical Resistivity Survey	NSG Innovations, LLC	February, 2022
Electrical Resistivity Survey	NSG Innovations, LLC	June, 2021
Final Report – Subsurface Investigations*	Barr & Provost	June, 2013

*Report was compiled for Ribway Engineering Group

1.05 JACK AND BORE

A. Submittals

1. Working drawings and written procedure describing in detail the proposed method of installation. This shall include, but not be limited to, size, capacity and setup requirements of equipment, location and dimensions of drilling and receiving pits, dewatering if applicable, method and type of equipment for joining pipe, and the method of monitoring and controlling line and grade. If the CONTRACTOR determines that the modifications to the method and equipment as stated in the submittal is necessary during construction, the CONTRACTOR shall submit a plan describing such modifications, including the reasons for the modification. Work shall not start until the CITY reviews submittals.
2. Any drilling fluid or mud, such as Bentonite drilling mud products, information (MSDS); special precautions necessary, method of mixing and application, and method of capture, removing and disposal of the spoils.

B. This item shall be constructed in accordance with the applicable sections of Item 603 of the City of Cincinnati Supplement to the Ohio Department of Transportation (ODOT) Construction and Material Specifications (CMS) and according to the notes and details shown on the Drawings.

C. The bore shall be reasonably close to the proposed grade (no pockets or bellies will be permitted) and large enough to accommodate not only the pipe, but also some means of introducing the backfill. The annular space between the outside of the pipe and the bore shall be completely filled with a lean (1 to 8) mixture of cement and sand, or cement, sand, and pea gravel rammed or blown into place dry. Cellular concrete mix designs, to fill the annular space, may be proposed by CONTRACTOR for CITY approval. Mix designs must achieve a minimum compressive strength of 150 psi. Do not use foam or admixtures that promote steel corrosion. Some positive means to insure that the space is completely filled shall be used.

D. The length of conduit to be paid shall be the actual number of linear feet measured from one end of the bored casing to the other end of the bored casing. The maximum footage that will be paid under this item will be that shown on the plans, unless otherwise directed by the CITY.

E. Ductile Iron Pipe (DIP), as shown on the Drawings and in accordance with Section 33 31 00 “Sewer Pipe”, shall be installed inside the steel casing pipe within the limits of the Jack and Bore.

F. Jacking and receiving pits will not be paid for as a separate pay item. All associated costs for jacking and receiving pits shall be included in the price bid for this item. The location and dimensions of the jacking and receiving pits, as determined by the CONTRACTOR, shall be approved by the CITY prior to any excavation operations.

1.06 DIRECTIONAL DRILL

A. This item covers the requirements for furnishing all labor, equipment, and materials associated with the installation of a high-density polyethylene (HDPE) gravity sanitary sewer pipe by directional drilling method. The Work specified herein shall include:

1. Excavation of a pilot hole at prescribed line and grade.
2. Excavation of drilling and receiving pits.
3. Pre-reaming of the hole.
4. Pullback of the HDPE pipe through the hole.
5. Pressure testing of the HDPE pipe.
6. Grouting of the annulus void between excavation and pipe.
7. All incidental work such as horizontal and vertical control points, grids, permits, slurry treatment and disposal, shoring and casing of the pits if required, and all else necessary for the complete installation of the pipe in accordance with these specifications and Drawings.

B. The CONTRACTOR shall be responsible for providing access to each pit. CONTRACTOR shall receive approval from the CITY prior to starting excavation for each pit. The CONTRACTOR is responsible for getting approval to use the any water required for drilling operations and for storage, safety, and security of all pipe and equipment on the Site

C. Guidance System

1. The directional drilling guidance system shall have the capability of measuring vertical and horizontal positions and roll. The guidance system must meet the following accuracy levels:

a.	Vertical position	± 1 inch at	1.5 to 8	feet of depth
b.		± 2 inches at	8 to 12	feet of depth
c.		± 4 inches at	12 to 15	feet of depth
d.		± 6 inches at	15 to 25	feet of depth
e.		± 10 inches at	more than 25	feet of depth
f.	Horizontal position	± 2 inches at	1.5 to 8	feet of depth
g.		± 4 inches at	8 to 12	feet of depth
h.		± 6 inches at	12 to 15	feet of depth
i.		± 12 inches at	15 to 25	feet of depth
j.		± 24 inches at	more than 25	feet of depth
k.				
l.	Roll	± 0.1° over a range of 0° to 360°		

2. Sewer grade transmitters must give pitch in 0.1 percent increments. Contractor shall use pitch reading as the primary tool with depth readings as a backup. Pitch readings shall be taken at the same clock reading.
3. Furnish manufacturer's certificate that the guidance system meets these requirements.
4. The CONTRACTOR shall demonstrate a viable method to eliminate error.

5. The guidance system shall be capable of generating a plot of the bore hole survey for the purpose of an as-built drawing.

D. Carrier Pipe

1. Tolerance requirements for the installed carrier pipe (HDPE) are performance oriented. Tolerances specified herein are the minimum requirements. It is the sole responsibility of the CONTRACTOR to select the appropriate types of equipment, work methods, and procedures to meet the tolerance requirements specified herein.
2. The carrier pipe is to convey sewer by gravity, therefore, it is essential that no changes in the pipe slope occur and that a downward slope be maintained throughout the entire length of the pipe. The ends of the pipe shall be located (horizontally and vertically) such that the HDPE pipe can be tied to other segments of the sewer line without backpitch, bellies (poor vertical alignment) or ponding water.
3. Pipes installed not meeting the tolerance requirement specified herein will be rejected. It will be the responsibility of the CONTRACTOR to replace it with a pipe meeting these requirements.
4. Line and grade deviations at the upstream end shall not exceed twelve (12) and six (6) inches, respectively.
5. Deviation from horizontal alignment of either end shall not exceed five (5) feet. Deviation from grade at both ends of pipe shall not exceed one (1) foot.
6. No ten (10) foot long segment of pipe shall have a slope less than 1.3 percent nor greater than 1.4 percent.

E. Qualifications

1. Directional drilling CONTRACTOR shall have actively engaged in the installation of pipe using guided boring for a minimum of three years, with at least three projects in similar ground with similar size and length.
2. Field supervisory personnel employed by the directional drilling contractor shall have at least five years experience in the performance of the work.

F. Submittals

1. Submit documentation showing three years of directional drilling experience with projects similar in scope and value to the project specified in the Contract Documents. Information must include, but not limited to, date and duration of work, location, pipe information (i.e., length, diameter, depth of installation, pipe material, etc.), project owner information, (i.e., name, address, telephone number, contact person), and the contents handled by the pipeline (water, wastewater, etc.).
2. Submit a list of field supervisory personnel and their experience with guided boring operations. At least one of the field supervisors listed must be at the site and be responsible for all work at all times when guided boring operations are in progress. Guided boring operations will not proceed until the resume(s) of the CONTRACTOR'S field supervisory personnel have been received and reviewed by the CITY.
3. Submit an as-built survey of the pilot hole prior to pre-reaming and an as-built survey of the carrier pipe upon completion of the Work, indicating conformance with the specified requirements.
4. Submit the following drawings and documents:

a. Working drawings and written procedure describing in detail the proposed method of installation. This shall include, but not be limited to, size, capacity and setup requirements of equipment, location and siting of drilling and receiving pits, dewatering if applicable, method of fusion and type of equipment for joining pipe, type of cutting tool head, and the method of monitoring and controlling line and grade. Submit the required certifications. If the CONTRACTOR determines that the modifications to the method and equipment as stated in the submittal is necessary during construction, the contractor shall submit a plan describing such modifications, including the reasons for the modification. Work shall not start until the CITY reviews submittals.
b. Bentonite drilling mud products information (MSDS); special precautions necessary, method of mixing and application, and method of capture, removing and disposal of the spoils.

5. Furnish manufacturer's certificate stating that the guidance system meets the tolerances specified in Item C of this specification.

G. Site Conditions

1. Drilling operations must not interfere with, or endanger surface and activity upon the surface. Areas outside designated work areas should not be disturbed.
2. CONTRACTOR must comply with all applicable jurisdictional codes and OSHA requirements.

H. Pipe and Fitting:

1. The pipe supplied under this specification shall be higher performance, high molecular weight, high-density polyethylene pipe. The pipe material shall be a Type III, Class C, Category 5, PE33 material as described in ASTM D 3350. Minimum cell classification values of the pipe material shall be (3 4 5 4 3 4 C) as referenced in ASTM D 3350. The SDR shall be as specified on the Drawings. The fittings supplied under this specification shall be molded from a polyethylene compound having a cell classification equal to or exceeding the cell classification of the pipe supplied under this specification.

I. Physical Properties of Pipe and Pipe Compound:

1. Density-The density shall be 0.941-0.957 gms/cm when tested in accordance with ASTM D 1505.
2. Melt Flow- Melt Flow shall be no greater than 0.11 gms/10 min. When tested in accordance with ASTAM D 1238- Condition E.
3. Flex Modulus- Flex Modulus shall be 110,000 psi to less than 160,000 psi when tested in accordance with ASTM D 790.
4. Tensile Strength at Yield- Tensile strength at yield shall be 3,200 PSI to less than 3,500 PSI when tested in accordance with ASTM D 638.
5. ESCR- Environmental Stress Crack Resistance shall be in excess of 5,000 hours with zero failures when tested in accordance with ASTM D 1693- Condition C.
6. Hydrostatic Design Basic shall be 1,600 psi at 23-C when tested in accordance with ASTM D 2837.

J. Backfill grout shall be pumped into the void between the HDPE pipe and the hole. The grout mix shall be submitted to the CITY for review.

K. If the CONTRACTOR chooses to submit a bid, which does not meet all requirements of this specification, the bid shall include a written description of the deviation with data, which shows the magnitude of the deviation and the justification for the deviation from this specification.

L. Submit certified lab data or manufacturer's written certifications to verify the physical properties of the materials supplied under this specification.

M. Polyethylene pipe and fittings may be rejected for failure to meet any of the requirements of this specification.

N. Pipe supplied under this specification shall be a nominal DIPS (Ductile Iron Pipe Size). The SDR (Standard Dimension Ratio) of the pipe supplied shall have a **minimum** wall thickness provided by SDR 11. The CONTRACTOR shall submit for **review** the pipe material, final inside diameter and final SDR thickness to be used on the project, including supporting design and performance data that demonstrates the pipe will be able to withstand all anticipated loads, including construction loads. The inside pipe diameter chosen shall be reviewed and approved by the CITY prior to ordering the pipe.

O. It is the responsibility of the CONTRACTOR to implement means and procedures compatible with anticipated ground conditions.

P. The CITY must be notified immediately if any condition is encountered that stops the forward progress of drilling operations. The CONTRACTOR and CITY must review the situation and jointly determine the feasibility of continuing drilling operations. When it is determined that it is impossible to continue drilling operations, the CONTRACTOR will be allowed to abandon the completed portion in place and start a new hole as directed by the CITY.

Q. The CONTRACTOR shall follow the pipeline alignment as shown on the Drawings, within the specified tolerances. If adjustments are required, the CONTRACTOR shall notify the CITY for approval prior to making the adjustments.

R. In the event of difficulties at any time during boring operations requiring the complete withdrawal from the tunnel, the CONTRACTOR shall be allowed to withdraw and abandon the tunnel and begin a second attempt at a location approved by the CITY. The abandoned tunnel shall be filled with Controlled Low Strength Material (CLSM).

S. Installation of the product pipe shall be in accordance with the following:

1. After the pilot hole is completed, the CONTRACTOR shall enlarge the hole by pre-reaming, and install a swivel to the reamer and commence pullback operations.
2. Reaming diameter shall not exceed 1.5 times the diameter of the product pipe being installed, and shall be kept as small as possible.
3. The product pipe being pulled into the tunnel shall be protected and supported so that it moves freely and is not damaged by debris on the ground during installation.
4. Pullback forces shall not exceed the allowable pulling forces for the product pipe. The thickness of the pipe is to be increased, at no additional costs, if pullback forces are anticipated to exceed the allowable pulling force on the specified pipe.
5. The CONTRACTOR shall allow sufficient lengths of product pipe to extend pass the termination point to allow connections to adjacent pipe sections or manholes. Pulled pipe

shall be allowed 7 days of stabilization prior making tie-ins. The length of extra product pipe shall be at the CONTRACTOR'S discretion and cost.

6. Restraint of pipe ends shall be achieved by means of Central Plastics (800) 654-3872 Electrofusion Flex Restraints, or approved equal. There is no guarantee that an equal is available. The Electrofusion Restraints shall be slipped over pipe ends against manhole wall and fused in place. Installation of Electrofusion Restraints shall be done in accordance with the manufacturer's procedures.

T. Drilling fluid shall be in accordance with the following:

1. Drilling fluid shall be a mixture of water and Bentonite clay. The fluid shall be inert.
2. Disposal of excess drilling fluid and spoils will be the responsibility of the CONTRACTOR who shall comply with all relevant regulations, right-of-way, work space and permit agreements. Excess drilling fluid and spoils shall be disposed at an approved location. The CONTRACTOR is responsible for transporting all excess drilling fluid and spoils to the disposal site and paying any disposal costs. Excess drilling fluid and spoils shall be transported in a manner that prevents accidental spillage onto roadways. Excess drilling fluid and spoils shall not be discharged into sanitary or storm systems, ditches or waterways.
3. Drilling fluid returns (caused by fracturing of formations) at locations other than the entry and exit points shall be minimized. The CONTRACTOR shall immediately clean up any drilling fluid that surfaces through fracturing.
4. The CONTRACTOR shall be responsible for making provisions for a clean water supply for mixing of drilling fluid.

U. Construction practices shall be in accordance with the following:

1. Handling of Pipe: Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking should be in accordance with the pipe manufacturer's recommendations. The pipe should be handled in such that it is not damaged by being dragged over sharp objects or cut by chokers of lifting equipment.
2. Repair of Damaged Sections: Segments of pipe having cuts or gouges on the exterior of the pipe in excess of 10 % of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using the butt fusion joining method.
3. Pipe Joining: Sections of polyethylene pipe should be joined into continuous lengths on the Job Site above ground. The joining method shall be the performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedure shall be capable of meeting all conditions alignment, and fusion pressure. The internal fusion bead should be trimmed out by a knifing action. Grinding, sawing, or tearing of the internal bead shall not be acceptable. Proper internal bead removal should extract a complete internal fusion bead for inspection. The extracted internal bead should have the double roll back appearance. Along with a smooth root cut of the wall area, this may include wall mass, but shall not exceed 1/10th of the wall thickness of the pipe itself.
4. Handling of Fused Pipe: Fused segments of pipe shall be handled to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable type chokers should be avoided. Nylon slings preferred. Care should be exercised to avoid cutting or gouging the pipe.
5. The machine shall have the following minimum design features:

a. Downhole tools, including bits, housing, and reamers shall be specifically designed for gravity installations.
b. Guide rods: shall be in a plane that passes through the centerline of the pipe thus canceling the bending forces in the machine caused by the fusion forces.
c. The Clamps: shall be mechanically or hydraulically operated and have the strength to "round up" the pipe close to the fused joint, be adjustable for "high/low" of the pipe, and clamp each piece of pipe on continuing straight centerline. The jaws shall be designed for quick installation and removal of inserts for smaller pipe sizes.
d. The Heater Plate: shall be electrically heated, and thermostatically temperature controlled. The surface shall be smooth with a high quality Ryton coating. The machine shall be capable of maintaining the surface temperature set at pipe manufacturer's recommended temperature range. The heater plate shall be equipped with an indicating thermometer but surface temperatures should be checked with a pyrometer occasionally. The heater surface shall be kept clean and free from plastic accumulation.
e. The Hydraulically Operated Machines: shall have a pressure regulator to preset the correct pressure for the desired fusion force, and there shall be an auxiliary system to control "feed" rate for the pipe face-off. Each machine shall be permanently equipped with a chart showing correct fusion pressure for each pipe size and wall thickness (SDR).

V. Hydrostatic Pressure Testing

1. At the CONTRACTOR'S option, hydrostatic pressure testing of the pipe may be done each time after fusing several segments of the HDPE pipe segments together on the surface. The testing is intended to verify proper fusion of the pipe segments prior to pulling the pipe through the hole, but will not verify proper fusion of these segments to those previously pulled through the hole. The test shall be conducted at a minimum 25 psi.

   For pump station force mains see 33 90 36 - Force Mains for testing requirements.

   For Low pressure sewer mains and low pressure sewer laterals pipes see 33 31 00 Sewer Pipe testing requirements.

2. Once the pipe is pulled through the hole, it shall be tested at a minimum pressure of 25 psi at the invert of the upstream manhole for 4 hours to verify that the pipe or pipe joints have no cracks because of the pullback.
3. Air testing is not acceptable for the HDPE sewer.
4. Pipe not holding the specified pressure for the test duration shall be removed from the hole, repaired, and installed and tested again.
5. The cost of the hydrostatic test shall be included in the bid price for the appropriate sections of conduit.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 SAFETY

A. Perform all work in accordance with the current applicable regulations of the Federal, State, and Local Agencies, including, but not limited to, CFR 29 Part 1926, Subpart S, Underground Construction.

3.02 AS-BUILT-PLANS

A. Provide the CITY with a complete set of As-Built-Plans showing all trenchless installations within thirty (30) calendar days of completion of the Work. Plans must be dimensionally correct copies of the Contract plans. Include notes on the plans stating the final pipe path diameter, casing diameter (if applicable), drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the casing. Note the size and type of carrier pipes to be placed within the casing as part of the Work.

END OF SECTION 31 70 00

SECTION 33 31 00

SEWER PIPE

PART 1 - GENERAL

1.01 SCOPE

A. This section covers furnishing and installing and fittings, complete with all jointing materials and appurtenances including, but not limited to, all necessary site preparation, excavation, embankment, dewatering, maintaining existing sanitary flow, sheeting, preparation of trench bottom, granular bedding and initial backfill, backfill, testing, disposal of waste material, dust, odor and noise control, traffic control, lights, signs and barricades, cleaning up, coring of existing manholes and connection, saw cutting and concrete encasement, restoration.

B. Pipe trenching, bedding, and backfilling are covered in Section 31 23 00 – Trenching and Backfilling

C. See Section 01 71 33 – Restoration of Improvements.

PART 2 - PRODUCTS

2.01 "VYLON" PVC PIPE

A. "Vylon" PVC Pipe, as manufactured by Prime Conduit, Inc., shall meet the performance requirements of ASTM F1803 "Standard Specification for Polyvinyl chloride (PVC) Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter". Flexible elastomeric seals meeting the requirements of ASTM D-3212 shall be used with "Vylon" PVC Pipe.

2.02 "ULTRA-RIB PVC PIPE"

A. "Ultra-Rib" PVC Pipe, as manufactured by J-M Manufacturing Company, Inc., shall meet the performance requirements of ASTM F794 "Standard Specification for Polyvinyl chloride (PVC) Closed Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter". Flexible elastomeric seals meeting the requirements of ASTM D-3212 shall be used with "Ultra-Rib" PVC Pipe.

2.03 "PVC (S.D.R. 35) Pipe"

A. If PVC (S.D.R. 35) Pipe is used under these items, all operations shall be in accordance with Items 603.016 and 707.41 of the City of Cincinnati Supplement to the State of Ohio, Department of Transportation, Construction and Material Specifications, latest edition. PVC sewer pipe and fittings, ASTM D-3034 and shall utilize ASTM D3212 flexible elastomeric gasketed joints.

2.04 "HDPE PIPE"

A. Shall be higher performance, high molecular weight, high-density polyethylene pipe (HDPE), and nominal. Ductile Iron Pipe Size (DIPS). The pipe material shall be Type III, Class C, Category 5,

PE33 material as described in ASTM F714. Minimum cell classification values of the pipe material shall be (3 4 5 4 3 4 C) as defined in ASTM F714. The Standard Dimension Ratio (SDR) shall be as specified, with SDR 11 as the minimum unless otherwise shown on the Drawings. Fittings supplied under this specification shall be molded from a polyethylene compound having a cell classification equal to or exceeding the cell classification of the pipe supplied under this specification.

2.05 "CONCRETE SEWER PIPE"

A. Reinforced Concrete Pipe (R.C.P.) is acceptable only for storm sewer service or large diameter sanitary sewers and shall be in accordance with Section 706 of the State of Ohio, Department of Transportation, Construction and Material Specifications, and City of Cincinnati supplement thereto. Joints shall be resilient and flexible watertight joints which meet or exceed the requirements of ASTM C-443 The joint material shall be a profile type gasket designed to fill the joint void area and obtain the required water tightness. The profile type gasket shall be installed as per the recommendations of the pipe and gasket manufacturers.

2.06 "DUCTILE IRON PIPE"

A. Furnish ductile iron pipe (DIP) conforming to ASTM A746, AWWA C151/A21.51, thickness as specified by the Rated Working Pressure (RWP) or Pressure Class listed on the Drawings. Joints shall conform to AWWA C111/A21.11 push-on joints. Pipe shall be furnished with a cement-mortar lining conforming to AWWA C104/A21.4.

2.07"SANITITE HP PIPE"

A. "Sanitite HP" pipe, as manufactured by Advanced Drainage Systems (ADS), shall meet the performance requirements of ASTM F2736 for 12" through 30" inch diameters, and ASTM F2764 for 30" through 60" diameters. Pipe shall be joined with a gasketed integral bell & spigot to provide a watertight seal in accordance with ASTM D3212.

2.07 MISCELLANEOUS

A. Field-cut joints and connections between dissimilar piping materials shall be made using Fernco "Flexible Couplings" with stainless steel shear rings, or Mission "Eastern Standard Band-Seal Couplings" with stainless steel shear ring, sized and installed in accordance with the manufacturer's recommendations.

PART 3 - EXECUTION

3.01 INSTALLATION AND TESTING

A. A deflection test will be required on all main line P.V.C, H.D.P.E., and C.C.F.P. sewers as specified in the City of Cincinnati Supplement to the State of Ohio, Department of Transportation, Construction and Material Specifications. Maximum limit for vertical deflection shall be five percent (5%) of the pipe's inside diameter. Deflection testing shall occur not less than thirty (30) days after final backfill placement. The CONTRACTOR shall repair or replace any sewer failing the deflection tests at no cost to MSDGC.

B. All mainline conduits shall be subjected to a leakage test by infiltration, exfiltration, or air testing.

All mainline conduits thirty-six (36) inches and smaller, shall be subjected to an air test. This test shall be performed in accordance with the latest ASTM or UNI-BELL PVC Pipe Association requirements for each unique pipe material in effect at the time that bids are submitted. To obtain an adequate seal, Ductile Iron Pipe may need to be epoxy coated in the bulkhead area, with PE-70 epoxy or equivalent.

Low pressure sewer mains and low-pressure sewer laterals shall be subjected to a hydrostatic pressure test at 150 psi for a minimum of two (2) hours in accordance with AWWA C600. If the pressure drops exceed five (5) psi in two (2) hours, or leakage is greater than allowable as determined by the formula in AWWA C600, the test shall be considered failed. Pressure Sewer Mains shall be tested after all ARVs, flushing locations, and other appurtenances have been installed, and with all service laterals installed to at least the curb stop.

C. The CONTRACTOR shall perform the leakage test at no additional cost to the MSDGC, including the furnishing of all labor, materials, and appurtenances necessary for the performance of the leakage test. The cost of the leakage test shall be included in the price bid for the appropriate ODOT Item, 603 items. Pipe Failing to pass the leakage test shall be repaired and retested at no additional cost to the MSDGC.

D. Flow will be permitted through the newly constructed sewer, prior to testing requirements being met, on an as needed basis, as directed by MSDGC.

E. When replacing existing sewers along the same alignment, the CONTRACTOR shall expose the existing sewer to verify alignment and elevation prior to construction. Adjustments shall be made only as directed by MSDGC.

F. Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned, and reassembled. Overtightening of bolts shall not be permitted to compensate for improper installation.

G. Whenever the proposed sewer is located at approximately the same alignment as the existing sewer and it is necessary to remove the existing sewer in order to construct the proposed sewer, the cost for removing the existing sewer, including the cost for disposing and transporting of materials or any additional excavation, restoration, or labor required, shall be included in the price bid for the various ODOT 603 bid items.

3.02 VIDEO TAPING OF INSTALLED SEWERS, LATERALS and MANHOLES

A. General Scope of Work

The CONTRACTOR shall furnish video inspection of installed sewers, installed gravity laterals to the public right-of-way or sewer easement, installed and existing manholes, and installed storm sewers in accordance with Item 603.059 of the City Supplement to the State of Ohio (ODOT) Construction and Material Specifications, NASSCO standards, and PipeTech compatibility requirements.

1. Personnel Certification and Experience

The person coding the pipeline inspection must be National Association of Sewer Service Companies' (NASSCO) PACP certified Lateral Assessment Certification Program (LACP) certified and Manhole Assessment Certification (MACP), with a minimum of three years of full-time experience coding defects using the NASSCO standard. PACP, LACP and MACP certification numbers must be provided to MSDGC, and proof of experience must be demonstrated by documentation such as a resume with references.

2. Equipment Requirements

All PACP, LACP, and MACP inspections shall be performed using color CCTV equipment specifically designed for sewer inspection, including a pan-and-tilt rotating camera head capable of documenting the internal condition of the asset.

3. Digital Recording and Data Compatibility

All CCTV, LACP and MACP work shall be recorded entirely in digital MP4 format encoded with a file compression of High Efficiency Video Coding (HEVC or H.265) (other formats need MSDGC PM approval) with an appropriate PACP/LACP database file (NASSCO PACP/LACP V7.0 Certified Access Database having compatibility with PipeTech® pipeline inspection software), and all video must be continuously metered.

B. Initial Survey Television Inspection

1. The CONTRACTOR shall televise each sewer segment and inspect the upstream and downstream manholes. All observations shall be documented in accordance with NASSCO standards.
2. Sewer sections and manholes shall be inspected using remote CCTV equipment. If a blockage prevents completion of the inspection in one direction, the CONTRACTOR shall attempt inspection from the opposite manhole. This reversal shall be documented with the same inspection record. The obstruction shall be promptly reported to MSDGC.
3. The recorded video shall document the entire internal condition of the sewer to the extent physically possible, including joints, connections, defects, and infiltration.
4. Any required flow control or cleaning shall be performed in accordance with the Contract Documents. The CONTRACTOR shall consider weather conditions and sewer flows and may delay inspection following major rainfall events to obtain acceptable video quality.

C. Video Taping of Installed Sewers

1. Conducting a final televising of each individual building sewer lateral from the main sewer line to the public right-of-way designation or sewer easement limit unless otherwise directed by MSDGC personnel. The televising shall start at the center of the mainline pipe and extend to a minimum of 10' beyond the center of the mainline pipe, which is the assumed easement limit. Inspections shall be conducted in accordance with LACP and shall follow all NASSCO LACP v7.0 requirements. If the full inspection from the mainline sewer to the right-of-way or easement limit cannot be completed due to any obstruction, the obstruction shall be located and reported immediately to the MSDGC Project Manager (PM).

D. Video Taping of Installed Laterals

1. Every lateral (from the sewer main to the cleanout) shall be identified by alphanumeric characters on the video display and shall include: project name, municipality, property address, CAGIS lateral numbers (CONTRACTOR shall request the seven-digit lateral numbers assigned by MSDGC for the lateral included in the video), inspector's name, sewer diameter and length, and date of inspection. All video must be continuously metered starting from the mainline sewer to the cleanout.

2. A dry erase board clearly displaying the lateral identification number and inspection date shall be visible and recorded at the beginning of each lateral inspection video prior to camera entry.

3. Robotic LACP inspection shall be done from the main sewer or available cleanout or access point. The Contractor shall use robotic technology to push or "launch" the lateral camera into the building sewer from the mainline. Many building sewers are 6 inches in diameter and are made of various materials.

E. Inspection of Installed Manholes

1. Manhole, chamber or access point inspection shall be conducted based on MSDGC's specifications and provided form. See the 'MACP Inspection Form' for the required header fields and observation requirements. All red font fields required by MACP are mandatory and the additional fields of 5. Owner, 6. Customer, 7. P/O Number (N/A), 8. Work Order (N/A), 10. Project, 12. Time are required.

F. Inspection Protocols

1. Equipment and Camera Requirements

All PACP and LACP inspections shall be performed using color CCTV equipment specifically designed for sewer inspection, including a pan-and-tilt rotating camera head capable of documenting the internal condition of the asset. MACP inspections shall be performed using a 360-degree camera such as a GoPro MAX or equivalent device with adequate lighting to identify all observations.

2. Digital Recording and Format Specifications

All inspections shall be recorded entirely in digital format as follows:

- Video format: MP4
- Encoding: H.265
- Resolution: Minimum 1080p
- Metering: Continuous footage display throughout inspection.

3. Data Delivery and Compatibility

All video and associated inspection data shall be uploaded electronically to eBuilder or another MSDGC approved digital platform. Physical media will not be accepted unless approved in writing by MSDGC.
Inspection data shall be delivered with an unmodified NASSCO, PACP, LACP, and/or MACP database file, compatible with PipeTech V7.0.

4. File Naming Conventions

PACP Video Files
Each PACP Video File must be in standard *.mp4 format and named as described below:

- [month]_[day]_[year]-[hour]_[minute]_[AM/PM]-[Inspector Name]-[Work Order Number].mp4
- e.g., "1_03_2012-11_23_AM-M LONGMIRE-411032.mp4"

LACP Video Files
Each LACP Video File must be in standard *.mp4 format and named as described below:

- [month]_[day]_[year]-[hour]_[minute]_[AM/PM]-[Inspector Name]-[address]_[street]-[Work Order Number].mp4
- e.g., "1 02 2012-07 51 PM-E SCHNEIDER-842 SUNDERLAND DR-405623.mp4"

MACP Video Files

Each MACP Video File must be a 360 video in H265 (encrypted MP4) format and named as described below:

- [month]_[day]_[year]-[hour]_[minute]_[AM/PM]-[Inspector Name]-[Work Order Number] (if provided)
- e.g., "11 15 2024-06 36 AM-J JOHN-444333.mp4" (360 video in H265 format)

5. Inspection Execution and Accuracy

a) All cleaning and television inspection reports shall be with-in +/- 2 feet of the measured linear footage between manholes along the existing sewer centerline from the center of the manhole.

b) The documentation of the work shall consist of PACP, LACP and MACP CCTV Reports, Unmodified PACP, LACP and MACP database, logs, electronic reports, etc. noting important features encountered during the inspection. The speed of travel shall be slow enough to inspect each pipe joint, tee connection, structural deterioration, infiltration and inflow sources, and deposits, but should not, at any time, be faster than thirty (30) feet per minute.

c) The camera must be centered in the pipe to provide accurate distance measurements to provide exact locations of important features in the sewer, and these footage measurements shall be displayed and documented on the video. The completed digital submittal will become the property of MSDGC.

6. Identification Requirements – Sewer Sections

a) Every section of sewer (manhole to manhole) shall be identified by alphanumeric on the video display and shall include:

- Project name
- Municipality
- Street name

- CAGIS manhole numbers (CONTRACTOR shall request the eight-digit manhole numbers assigned by MSDGC for all proposed and existing manholes included in video)
- Inspector's name
- Sewer Diameter and length
- Date of inspection

b) All video must be continuously metered from manhole to manhole.

c) A dry-erase board displaying the manhole identification number and inspection date shall be recorded at the beginning of each MACP inspection prior to camera entry.

7. Lateral (LACP) Specific Protocols

a) Conducting a final televising of each individual building sewer from the main sewer line to the public Right of Way designation or sewer easement limit. Unless otherwise directed by MSDGC personnel, the easement limit should be assumed to be a minimum of 10' from the center of the mainline pipe. This final televising shall be in LACP and shall follow all LACP V7.0 standards. If a full mainline to Right of Way or easement inspection is unable to be completed due to an obstruction of any sort, said obstruction must be located and reported to the MSDGC PM immediately.

b) Every lateral (from the sewer main to the cleanout) shall be identified by alphanumeric on the video display and shall include:

- Project name
- Municipality
- Property address
- CAGIS lateral numbers (CONTRACTOR shall request the seven-digit lateral numbers assigned by MSDGC for the lateral included in video)
- Inspector's name
- Sewer Diameter and length
- Date of inspection

c) All video must be continuously metered from the main sewer to the cleanout.

d) A dry-erase board displaying the lateral identification number and inspection date shall be recorded at the beginning of each lateral inspection prior to camera entry.

8. Manhole (MACP) Assessment and Final Acceptance

a) A LEVEL 1 condition assessment of manholes is required. This collection of basic information will help determine if any repairs or further attention is needed for our manhole assets.

b) If the CONTRACTOR submitted inspection data does not meet the requirements of this specification, MSDGC will notify the CONTRACTOR of any deficiencies. The CONTRACTOR shall correct and resubmit deficient items prior to final acceptance and payment. Sewer acceptance is contingent upon receipt of acceptable CCTV inspection documentation in accordance with this specification.

MACP Inspection Form

Header Section

General Information

1. Surveyed By (1,2)	2. Certificate Number (1,2)	3. Reviewed By	4. Reviewer Certificate No.
5. Owner	6. Customer	7. P/O Number	8. Work Order
9. Media Label	10. Project	11. Date (1,2) YYYYMMDD	12. Time
13. Sheet Number (1,2)	14. Weather	15. Pre-Cleaning (2)	16. Date Cleaned YYYYMMDD
17. Purpose of Survey (1,2)	18. Inspection Level (1,2)	19. Inspection Status (1,2)	20. Consequence of Failure

Location

21. Drainage Area	22. MH/Access Point No. (1,2)	23. Street (1,2)	24. City (1,2)
25. Location Code (2)	26. Surface Type (2)	27. Inflow Potential from Runoff	
28. Location Details			

Manhole

29. MH Use (2)	30. Access Type (1,2)	31. Year Constructed YYYY
32. Year Renewed YYYY		33. Evidence of Surcharge (2)

Measurements

34. Rim to Invert (2)	35. Rim to Grade (2)	36. Grade to Invert (2)	37. Rim to Grade Exposed
38. Northing*	39. Easting*	40. Elevation**	41. Coordinate System*
42. Vertical Datum**		43. GPS Accuracy	

44. Additional Information

* Information required if Northing, Easting or Coordinate System data is recorded.
** Information required if Elevation or Vertical Datum data is recorded.

Red Font Fields = Mandatory, Black Font Fields = Optional

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MACP Inspection Form

Manhole Component Observation Section

Cover

45. Type (2)	46. Shape (2)	47. Size (2)	48. Center Cover Size	49. Size Width (2)
50. Cover Material (2)	51. Hole Diameter (Vent) (2)	52. Hole Number (2)	53. Bearing Surface Diameter (2)	
54. Bearing Surface Width (2)	55. Cover/Frame Fit (2)	56. Cover Condition (1,2)		

Cover Insert

57. Insert Type (2)	58. Cover Insert Condition (2)

Cover Adjustment Ring

59. Ring Type (1, 2)	60. Ring Material (2)	61. Ring Condition (1,2)	62. Ring Height

Frame

63. Frame Material (2)	64. Bearing Surface Width (2)	65. Bearing Surface Depth (2)	66. Clear Opening Diam (2)
67. Clear Opening Width (2)	68. Frame Condition (1,2)	69. Seal Condition (2)	70. Offset Distance (2)
71. Seal Inflow (2)	72. Frame Depth		

Chimney

73. Chimney Present (2)	74. First Material (2)	75. Second Material	76. Chimney I/I	77. Clear Opening
78. Chimney Depth (2)	79. Lining Interior	80. Lining Exterior	81. Chimney Condition (1)	

Cone

82. Type (2)	83. Material (2)	84. Depth (2)	85. Lining Interior	86. Lining Exterior	87. Cone Condition (1)

Wall

88. Wall Diameter (Length)	89. Wall by Size (Width)	90. Material (2)	91. Depth (2)
92. Wall Lining Interior	93. Wall Lining Exterior	94. Wall Condition (1)	

Bench

95. Bench Present (2)	96. Bench Material (2)	97. Bench Lining	98. Bench Condition (1)

Channel

99. Channel Installed (2)	100. Channel Material (2)	101.Type (2)	102. Exposure (2)	103. Channel Condition (1)

Steps

104. Number (2)	105. Material (2)

Additional Component Information

106. Additional Component Information

Pipe Connections

107. Pipe No. (2)	108. Clock Pos (2)	109. Rim to Invert (2)	110. Direction (2)	111. Material (2)	112. Shape (2)	113. Height (Diam) (2)	114. Width (2)	115. Cond (2)	116. Seal Cond (2)	117. Pipe Type (2)	118. Struct ID	119. Comment

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END OF SECTION 33 31 00

SECTION 33 39 00

SEWER MANHOLES

PART 1 - GENERAL

1.01 SANITARY SEWER MANHOLES

A. Drop manholes shall be in accordance with Standard Drawing Acc. No. 49003.

B. Precast Concrete Drop manholes shall be in accordance with Standard Drawing Acc. No. 49003A

C. Standard Type “S” manholes shall be in accordance with Standard Drawing Acc. No. 49037.

D. Manholes at the base of steep slopes shall be in accordance with Standard Drawing Acc. No. 49046.

1.02 STORM MANHOLES (NOT USED)

1.03 SANITARY SEWER CASTINGS

A. All manhole frames and covers shall be in accordance with Standard Drawing Acc. No. 49005, 49006, 49051, 60866 and 60867 as specified on the Drawings and as applicable.

1.04 STORM MANHOLE CASTINGS (NOT USED)

1.05 Where high velocities or sharp bends (90 degrees) are inherent in the sewer design, include the following spec for the addition of Silica Fume Silica Fume (ASTM C 1240) shall be added to the concrete mix for the base and invert of manholes as noted on the plans. The invert may be formed in the field after installation of the proposed sewer. If a precast manhole base is provided with the invert (channel), silica fume shall be added to the whole manhole base section. The minimum 28 day compressive strength of the silica fume concrete shall be at least 8,000 psi and the amount of silica fume added shall be at least 15% by weight of the concrete mix.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Precast Concrete Manholes and Reinforcement shall be in accordance with ASTM C478, except as modified herein.

B. Standard Precast Concrete Manhole Base shall be in accordance with Standard Drawing Acc. No. 49056.

C. Concentric cones shall be provided for all Standard Type “S” manholes, unless specified otherwise or with written approval from the CITY to use eccentric cones.

D. Steps constructed of Rubber Coated Cast Iron, Plastic Coated Steel, Stainless Steel or Fiber Reinforced Plastic (FRP) shall be provided for all manholes, unless specifically stated otherwise.

2.02 MANUFACTURE

A. Precast sections may be provided with lifting notches on the inside faces of walls to facilitate handling. Lifting notches shall be not more than 3 inches deep; holes extending through the wall will not be acceptable.

B. Inverts shall be in accordance with Standard Drawing Acc. No. 49004.

PART 3 - EXECUTION

3.01 INSPECTION

A. Precast concrete sections shall be inspected when delivered and all cracked or otherwise visibly defective units shall be rejected.

3.02 CONSTRUCTION

A. Bases

1. No wedging or blocking under precast concrete bases will be permitted.
2. In no case shall the invert section through a manhole be greater than that of the outgoing pipe. The shape of the invert shall conform exactly to the lower half of the pipe it connects. Side branches shall be connected with a radius of curve as large as practicable. All inverts shall be troweled to a smooth, clean surface. See Standard Drawings Acc. No. 49004.

B. Riser and Cone Sections

1. Lifting notches in manhole walls shall be filled with nonshrinking grout.
2. Rubber coated cast iron, plastic coated steel, stainless steel or FRP manhole steps shall be provided, and shall be grouted into prepared holes with nonshrinking grout. Embedded legs shall be cut if required to prevent protruding through the manhole wall.

C. Frames

1. Securely fasten the frame to the concrete portion of the manhole by means of four and three-quarters (4-3/4) inch stainless steel cinch anchors with five-inch long bolts. If grade rings are installed, the CONTRACTOR shall use bolts long enough to securely fasten the frame into the concrete cone section.

D. Adjusting Casting to Grade

1. See Standard Drawings Acc. No. 49058-A.

3.03 TESTING

A. Manhole Vacuum Test

1. The CONTRACTOR shall test all proposed manholes for leakage by means of vacuum testing. The CONTRACTOR shall also test all proposed connections to existing manholes for leakage by means of vacuum testing. The vacuum testing shall not be performed until after the manholes are set to final grade and the manhole castings are bolted down. All lift holes shall be plugged. Any other openings, such as pressure relief valves, shall be temporarily plugged to allow the vacuum tests. All pipes entering the manhole shall be plugged and care shall be taken to sec
2. urely brace the plugs from being drawn into the manhole. The vacuum equipment test head shall be placed in the opening of the casting only and the seal inflated in accordance with the manufacturer's recommendations.
3. Vacuum testing shall be in accordance with ASTM C1244. A vacuum of ten inches of mercury (10" Hg) shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine inches of mercury (9" Hg). The manhole shall pass if the time meets or exceeds the allowable times as calculated from ASTM C1244, or as approved by the CITY. All manhole repair and testing required because of the failure to meet the testing requirements shall be at the CONTRACTOR's cost. The cost of the manhole vacuum leakage test shall be included in the price bid for the various ODOT Specification 604 items.

END OF SECTION 33 39 00