Freeway Landfill and Dump Closure - Dig and Haul

Technical Specifications - *100% Draft Submittal*

Prepared for
Minnesota Pollution Control Agency

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SUMMARY OF WORK

PART 1: GENERAL

1.01 CONTRACT DOCUMENTS

A. The Contract Documents are defined in the Agreement. The terms of the Contract Documents apply to these Specifications as though fully repeated herein.

B. The format of these Specifications is based upon the CSI MASTERFORMAT; however differences in format and subject matter location do exist. It is Contractor's sole responsibility to thoroughly read and understand these Specifications and request written clarification of those portions that are unclear.

1. The term "provide" or "provided" shall mean "furnish and install complete in-place".

C. The division of the Work as described in these Contract Documents is for the purpose of specifying and describing work that is to be completed. There has been no attempt to make a classification according to trade or agreements that may exist between Contractor, Subcontractors, trade unions, or other organizations. Such division and classification of the Work shall be Contractor's sole responsibility.

1.02 DEFINITIONS

A. Contract Documents – As defined in the Instructions to Bidders and the Agreement.

B. Drawings – Contract Drawings.

C. Specifications – All sections of the Technical Specification Sections listed on the Specification Index.

D. Owner – Minnesota Pollution Control Agency (Project Owner)

E. Property Owner – Property Owner as noted on the Drawings

F. Engineer – Barr Engineering Company and engineer of record as stated on the Drawings and these Specifications.

G. Owner's Representative - Owner's employee assigned authority to direct the Work, or employee of Engineer as designated by Owner.

H. Landfill – Freeway Landfill

I. Dump – Freeway Dump

J. Waste – The waste materials contained in the Landfill and Dump

1.03 EXISTING SITE CONDITIONS

A. The Site is located in Burnsville, Dakota County, Minnesota, on the south side of the Minnesota River near Interstate 35W (with the Landfill located west of Interstate 35W and the Dump located east of Interstate 35W). The construction limits shown on Drawings shall define the boundary of the Site.

B. The Work generally consists of closure of the Freeway Landfill and Freeway Dump. This includes excavation of cover soils, excavation and disposal of Waste, placement of common fill and topsoil, demolition of existing structures within the waste footprint, and restoration of the area.

C. Site Access:

1. Landfill: Primary access to the landfill is from the northeast via W Black Dog Road. Secondary access is from the southeast via Embassy Road.

2. Dump: Access to the dump is from the southwest via Cliff Road.

D. The Site has been developed as indicated on the Drawings. There are no potable water supplies, or sanitary facilities. Electrical service is not available for use at the Site.

E. Groundwater monitoring wells are present at the Site and are sampled and maintained regularly. Some wells are designated for sealing as part of the Work as shown on the Drawings. Protect and maintain access to all other wells at all times. Contractor shall be responsible for damage to groundwater monitoring wells as a result of construction activity and shall repair or replace damaged wells to Owner's satisfaction at no expense to Owner.

F. An active waste transfer facility, referred to as Freeway Transfer Station, is present on the eastern portion of the Freeway Landfill site. The Transfer Station will remain operational throughout the project, and uninterrupted access must be provided for employees and waste hauling trucks.

G. A salt unloading and distribution facility, referred to as U.S. Salt or Port Marilyn LLC, is present to the north of the Landfill. Uninterrupted access must be provided for employees and commercial vehicles.

1.04 PROJECT DESCRIPTION

A. The overall scope of the Work, which is more fully described in these Contract Documents, includes, but is not necessarily limited to, furnishing all labor, tools, equipment, and materials necessary for Contractor to:

1. Obtain all permits necessary to complete the Work.

2. Mobilize and demobilize labor, equipment, and materials.

3. Performing and managing the work required to maintain requirements of the construction stormwater pollution plan (SWPPP).

4. Locating, identifying, and protecting existing utilities and site features.

5. Provide temporary controls:

    a. Temporary utilities

    b. Construction Facilities

    c. Traffic Control

    d. Flood Protection

    e. Controlling erosion and sediment transport at the Site.

    f. Controlling waste-contact runoff from leaving the existing waste limits.

    g. Temporary Environmental Controls (noise, dust, odor, vector, etc.)

6. Site Preparation

    a. Furnishing and installing construction rock entrance and silt fence.

    b. Clearing and grubbing site vegetation as shown on Drawings

7. Demolish and dispose of existing structures as shown on Drawings.

8. Remove existing pavement as shown on Drawings.

9. Abandon-in-place or remove portions of existing utilities as shown on Drawings.

10. Seal monitoring wells as shown on Drawings.

11. Excavation and fill:

    a. Strip and stockpile topsoil, cover soil and common fill for re-use.

    b. Excavate, haul, and dispose of existing Waste at off-site disposal facility(s).

    c. Backfill and grade the Site to maintain drainage.

    d. Place topsoil.

12. Furnishing and installing potable, sanitary, and storm piping.

13. Erosion Control and Site Restoration

a. Furnishing and installing erosion control blanket and sediment control logs.

b. Seeding, mulching, and fertilizing required to establish vegetation.

c. Furnishing and installing granular filter and riprap materials.

d. Furnishing and installing bituminous pavement.

e. Furnishing and installing gravel road surfacing materials.

14. Install fencing and gates.

15. Performing construction/certification surveying, soil/pipe testing, and other construction quality assurance (CQA) activities required by the Specifications.

16. Cleanup and demobilization

a. Keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work, and at the completion of the Work, shall remove all waste materials, rubbish and debris from the premises as well as all tools, construction equipment and machinery, temporary facilities, and surplus materials. Contractor shall leave the Site clean and ready for occupancy by Owner.

17. Perform other Work as shown on Drawings

B. It is the intent of the Contract Documents to cover all aspects of the Project. Should there be some item or items not shown on the Drawings or not described in these Specifications which are required for the Work, providing those items shall be considered incidental to the Work at no additional cost to Owner.

C. The Work includes the furnishing of all labor, equipment, tools, machinery, materials, and other items required for the construction of a complete project as specified, except as specified otherwise herein.

D. Equipment furnished shall be in safe operating condition and of adequate size, capacity, and condition for the performance of the Work.

E. Obtain all measurements necessary for the Work and be responsible for establishing all dimensions, levels, and layout of the Work. Where Work of one trade joins to or is part of other Work, there shall be no discrepancy or incompleteness in the finished Work.

F. Supervise, inspect and direct the Work competently and efficiently, devoting such attention and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Means, methods, techniques, sequences, and procedures of construction are solely Contractor's responsibility. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.

G. Provide time, access, and assistance for Owner's construction quality control program.

H. All work shall be done in accordance with applicable Laws and Regulations.

1.05 PERMITS

A. Perform Work in accordance with applicable Laws and Regulations.

B. Secure all licenses and permits necessary for the execution of the Work.

C. Contractor shall obtain and pay for all fees for the required permits, unless otherwise noted below. Work cannot begin until all permits are received. The regulatory requirements for construction of the work shall include, but are not limited to:

1. Demolition Permit(s)

2. Well Sealing Permit(s) and Notifications

3. MnDOT Right of Way Permit

4. Minnesota DNR Water Appropriation Permit

5. MPCA Contaminated Groundwater Pump-Out General Permit)

6. Electrical Permit

7. Other permits to treat or discharge Contact Water in addition to those options provided by Owner

8. Contractor shall contact Gopher State One Call and private parties to identify and mark all underground utilities prior to beginning any subsurface work.

9. Contractor will sign onto the site Construction Stormwater Permit and comply with all general permit requirements and the provisions of the site Construction Stormwater Pollution Prevention Plan.

10. Contractor shall obtain any necessary permits to haul materials or equipment on public streets and highways.

11. Contractor shall submit copies of all permits upon receipt.

12. Contractor shall notify Owner and submit any correspondence regarding any regulatory notice or correspondence.

D. Owner will obtain and pay for all fees for the following permits:

1. Minnesota General Permit for Construction Stormwater under NPDES/SDS (SWPPP)

2. MCES Discharge Permit

3. Lower Minnesota River Watershed District Individual Permit

4. Joint Permit Application for Activities Affecting Water Resources in Minnesota

5. Minnesota No Rise Certificate

1.06 WORK COVERED BY OTHERS

A. Owner, or Owner's On-site Representative, will perform the following tasks related to the Work:

1. Owner will provide benchmark and site coordinate information necessary for construction of the Work. Once provided, it is Contractor's responsibility to protect the information in accordance with Section 01 14 19, Use of Site. Contractor shall request such information from Owner a minimum of five days prior to the time when such information is needed.

2. Owner will provide access to the site.

B. Engineer will perform the following tasks related to the Work:

1. Screening excavations and collecting confirmation samples to determine final extent of excavation. Contractor is advised that removal area limits shown on the Drawings are approximate and field delineation is required.

C. Property Owners will perform the following tasks related to the Work:

1. Remove items from Site as shown on Drawings.

2. Continue to operate existing Freeway Transfer Station. Contractor shall maintain access, utilities, and security around Freeway Transfer Station during and after construction activities.

1.07 OWNER FURNISHED PRODUCTS (NONE)

1.08 CONTRACTOR'S USE OF PREMISES

A. See Section 01 14 19, Use of Site for additional information.

1.09 SCHEDULE

A. The Work performed under these Specifications shall begin and be completed in accordance with the schedule set forth in the Contract Documents.

1.10 PROJECT CONTACTS

A. Owner – Project Manager

TBD

B. Engineer – Principal/Certifying

Dan Fetter, P.E.
Vice President
Barr Engineering Company
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435-4803
O: 952-832-2741
M: 612-581-4864
DFetter@barr.com

C. Geologist – Project Manager/Design

TBD

D. Engineer – Design

Bryan Pitterle, P.E.
Civil Engineer
Barr Engineering Company
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435-4803
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M: 608-335-3893
BPitterle@barr.com

E. Owner's Representative – Construction Observer

TBD

F. Contractor

TBD

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 11 00

SECTION 01 14 19

USE OF SITE

PART 1: GENERAL

1.01 SUMMARY

A. Section includes:

1. Contractor use of Site, including remote Sites
2. Work hours
3. Disruption of utilities
4. Safety

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 CONTRACTOR USE OF SITE

A. The Site is defined as the area within the construction limits as shown on the Drawings. Contractor shall limit operations, including material and equipment storage, to within those boundaries, and as otherwise agreed to with Owner.

B. Coordinate with Owner and Engineer to limit operations, including materials and equipment storage, to the areas agreed upon prior to performance of the Work.

C. Coordinate with Owner and Engineer to identify property limits at the Site prior to commencement of any construction activity.

D. When unfavorable weather, soil, drainage, or other unsuitable construction conditions exist, confine operations to tasks that will not be adversely affected by such conditions. Construct no portion of the Work under conditions that would adversely affect the quality of the Work, unless special means or precautions are taken to perform the Work in a proper and satisfactory manner.

E. Confine noise-generating hours of operation to between 7 AM and 9 PM local time Monday through Saturday. No Work shall be allowed outside of these hours or on legal holidays without written approval by Owner. This includes staging and operation of machinery; delivery of equipment, materials and machinery to the Site; construction activity; and any other activity that,

in the opinion of Owner, may be disrupting to the surrounding community or the operations of Owner.

1. For portions of the project that require utility service disruptions, coordinate timing of these tasks with Owner. These tasks may be required to be performed during off-peak or overnight hours.

F. Coordinate with Owner and Engineer to identify project Site access, parking, and staging areas. If additional access is desired, submit plan to Owner and Engineer for review and approval. Any access shall not disturb traffic on city streets. Any damage to existing pavements or ground surfaces caused by access shall be restored to pre-construction conditions prior to demobilization.

G. Contractor must perform all work so that access to the Site and adjacent facilities and installations are not restricted. At all times, Contractor shall conduct its operations so as to maintain the roads along work areas, including developing and maintaining by-passes or alternate routes if necessary, such that Contractor's operations do not impair the use or access to the Site or facilities and installations.

H. Contractor shall be responsible for repair of streets, highways, and private roads including that are damaged by Contractor's operations. Contractor is responsible for any releases and their damages, environmental and otherwise, that are caused by Contractor's operations.

I. Owner approval is required prior to storing any materials on Site.

J. Perform operations carefully and in such a manner as to protect existing facilities and utilities, unless noted otherwise. Obstructions not shown on the Drawings may exist and shall be exposed by Contractor without damage. Contractor shall be responsible for damage to existing facilities and utilities resulting from Contractor's operations, and shall repair or replace damaged items to Owner's satisfaction. Groundwater monitoring wells shall be protected during construction, unless noted otherwise.

K. Conduct operations so as to preserve benchmarks, survey reference points, and stakes existing or established by Owner for construction, unless noted otherwise. Contractor will be charged the expense of repairing or replacing survey markers and shall be responsible for mistakes or lost time that results from damage or destruction of survey markers due to Contractor's operations.

L. Waste-contact water generated during construction must remain within the existing waste limits and may not be discharged except in accordance with permits. Under no circumstances shall waste-contact water be discharged into wetlands.

M. Protect all wetlands from disturbance and sediment to the extent practicable, unless noted otherwise.

N. Contractor to be liable for environmental impacts of Contractor's activities.

1.04 UTILITIES

A. Immediately resolve any disruptions caused by Contractor activity or inactivity that result in shut down of any utility service, other than those service disruptions scheduled and approved by Owner.

B. Contractor shall be responsible for any costs associated with the unscheduled facility or utility service shutdown and its resolution to bring the services back to normal operation, including, but not limited to, cost for storage; piping; pumping; trucking; cleanup; or labor costs, fees, fines, or penalties incurred by Owner related to the service disruption.

1.05 SAFETY

A. See Section 01 35 00, Construction Safety and Security.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 14 19

SECTION 01 29 00

MEASUREMENT AND PAYMENT

PART 1: GENERAL

1.01 SUMMARY

A. This Section of the Specifications describes the measurement and payment for the Work to be completed for each of the lump sum or unit price items which make up the entire Total Contract Price.

B. Each lump sum or unit price (each a "Contract Unit Price") shall constitute full compensation as specified herein for each item of Work completed in accordance with the Specifications and Contract Drawings and other Contract Documents, including all clean up and restoration.

C. All costs in connection with the Work, including furnishing all materials, machinery, supplies and appurtenances; providing all construction equipment and tools; and performing all necessary labor, coordination, supervision, and management to fully complete the Work shall be included in the unit or lump sum prices quoted on the Bid Form. All Work not specifically set forth as a separate item shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the amounts and prices submitted in the Total Contract Price.

1.02 RELATED SECTIONS

A. Section 01 33 00 Submittals

B. Section 01 77 00 Closeout Procedures

1.03 ESTIMATED QUANTITIES

A. All estimated quantities for unit price items in the Bid Form are approximate and are to be used only as a basis for estimating the Total Contract Price. The actual amount of work completed or materials furnished under the unit price items may differ from the estimated quantities. The basis of payment for work or materials furnished or placed will be the actual amount of Work completed or material furnished and placed. Contractor agrees to make no claim for damages, anticipated profits, or otherwise due to any difference between the amounts of work actually performed or materials furnished and placed and the estimated amounts included in the Bid Form. The unit prices in the Bid Form shall not be adjusted if actual quantities of Work vary from estimated quantities in the Bid Form. Owner reserves the right to adjust estimated quantities (including removing the item completely) based on testing and field conditions.

1.04 INTENT OF BID FORM ORGANIZATION

A. Payment for all Work shall be in accordance with the terms and conditions set forth in the Agreement in the Contract Documents and Contractor's Contract Unit Prices set forth in Contractor's conformed Bid Form incorporated in the Agreement. The bid items set forth in the Bid Form subdivide the Work for purposes of measurement and payment only, and are intended to represent the entirety of the Work as set forth in the Contract Documents.

B. The following paragraphs provide additional descriptions of the Work included in each of the Bid items subject to the provisions of paragraphs 1.01, 1.02, and 1.03 of this Section.

1. Some of the Bid items are based on unit lump sum prices. Partial progress payment for those unit lump sum items shall be made in accordance with percent completed for each item based on the breakdown of the lump sum price in Contractor's conformed Bid Form or as agreed to in the Schedule of Values.

2. Other Bid items are based on Unit Prices. For those items, progress payments shall be based on the actual quantities of each item of Work completed in accordance with the Contract Documents.

C. The procedures for submitting and processing progress payments are set forth elsewhere in the Contract Documents.

D. The paragraphs below describe the materials, equipment, labor, and supplies that are included in each of the Bid items.

1.05 BID ITEMS

A. General Items (GE)

GE.1. Mobilization and Demobilization

a. Method of measurement: Mobilization and Demobilization shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Mobilization and Demobilization and all project support, including but not limited to, costs of all supervision, labor, coordination, management, materials, equipment, overhead and profit unless specifically included in other Bid Items, and performing all operations as are necessary for mobilization and demobilization, all complete as specified.

c. This item shall include Contractor's premium for any special insurance obtained for this project; all project meetings; coordination; furnishing, installing, and maintaining Contractor's facilities; providing work area security; coordinating work area access; coordinating and maintaining access to other properties; installing and removing temporary access roads/ramps or other features required by Contractor; development, implementation, and maintenance of appropriate health and safety

plan; providing all electrical, water, telephone, and other utility services required or needed by Contractor to perform the Work; all sequencing and staging activities not paid for separately as a Bid Item; equipment mobilization and demobilization; submittals; obtaining all permits and lockout tagout procedures required of Contractor; identifying and locating utilities as necessary for the Work; relocating all equipment, supplies, and miscellaneous items in the Work area as shown on the Drawings; site cleanup; documentation; and all incidentals and other items not specifically paid for but included in the total scope of Work.

GE.2. Temporary Erosion Control and SWPPP Implementation

a. Method of measurement: Temporary Erosion Control and SWPPP Implementation shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Temporary Erosion Control and SWPPP Implementation, including but not limited to, SWPPP compliance and maintenance requirements, concrete washout management area, construction entrance, culvert/inlet protection, erosion control blanket, flotation silt curtain, hydromulch, sediment control log, silt fence, spray tackifier, temporary sedimentation basin(s) and outlet structure(s), temporary seeding and mulching, furnished, installed, maintained, and removed at completion of the project, all complete as specified. Ninety-percent of the Lump Sum Price shall be paid for furnishing, installing, and maintaining erosion control and ten-percent of the Lump Sum Price shall be paid upon removal of the erosion control at the completion of the Project.

GE.3. Surveying

a. Method of measurement: Surveying shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor will be paid a Lump Sum (LS) Price for Surveying, all complete as specified. This item shall include construction staking, surveying, and measurement of all quantities of items paid by a Unit Price based on a volume or area measurement.

GE.4. Soil Testing

a. Method of measurement: Soil Testing shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Soil Testing, all complete as specified. This item shall include all testing of Subgrade, Common Fill, Topsoil, Aggregate Base, Gravel Surfacing, Pipe Bedding, Granular Filter, Pea Stone, and Riprap soil materials as required by the Technical Specifications and all other informational soil testing deemed necessary by the Contractor to perform the Work.

GE.5. Traffic Control

a. Method of measurement: Traffic Control shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Traffic Control, including but not limited to, all warning lights, barricades, informational signs, snow fence, traffic permits, and watchmen, all complete as specified.

GE.6. Clearing and Grubbing

a. Method of measurement: Clearing and Grubbing shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Clearing and Grubbing, including but not limited to, clearing and grubbing, removing trees, shrubs, stumps, and other plants, hauling, stockpiling, and disposing of materials appropriately, all complete as specified.

GE.7. Demolition and Disposal (Freeway Landfill)

a. Method of measurement: Demolition and Disposal (Freeway Landfill) shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Demolition and Disposal (Freeway Landfill), including but not limited to, abatement, demolition of structures, pavements, and slabs, sorting of materials, salvaging of gravel for reuse on site (if feasible), removal, transport, and disposal of material, and sealing monitoring wells, all complete as specified.

GE.8. Demolition and Disposal (Freeway Dump)

a. Method of measurement: Demolition and Disposal (Freeway Dump) shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Demolition and Disposal (Freeway Dump), including but not limited to, abatement, demolition of structures, pavements, and slabs, sorting of materials, salvaging of gravel for reuse on site (if feasible), removal, transport, and disposal of material, and sealing monitoring wells, all complete as specified.

B. Environmental Management (EM)

EM.1. Flood and Water Control

a. Method of measurement: Flood and Water Control shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor will be paid a Lump Sum (LS) Price for Flood and Water Control, including but not limited to, implementing Contractor's flood control plan, installing and maintaining throughout construction any flood protection berms, diversion channels, temporary waste covers, furnishing, installing, operating, and maintaining pump systems, or other necessary items for managing and protecting the site from flooding (from surface water, stormwater, and groundwater seepage) and dewatering the site to facilitate construction under dry conditions, including all required documentation as defined in these specifications, all complete as specified.

EM.2. Leachate Transfer

a. Method of measurement: Leachate Transfer shall be measured per Thousand Gallon (TGAL) of leachate transferred to Metropolitan Council Environmental Services (MCES), measured to the nearest Thousand Gallon as measured by Contractor's flow meter.

b. Basis of Payment: Contractor shall be paid a Unit Price per Thousand Gallon (TGAL) for Leachate Transfer, including but not limited to, managing, storing, testing, furnishing and installing temporary piping and pumps, pumping, discharging, and other necessary items for transferring leachate from within the construction area. This Bid Item does not include the MCES fee (Owner will pay MCES fee directly).

EM.3. Dust Control

a. Method of measurement: Dust Control shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Dust Control, including but not limited to, providing water and water tank trucks equipped with water cannons and other necessary items and methods for controlling dust, all complete as specified.

EM.4. Odor and Volatile Organics Control

a. Method of measurement: Odor and Volatile Organics Control shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Odor and Volatile Organics Control, including but not limited to, monitoring for, furnishing, installing, and implementing control measures for the presence of odors, volatile organics, and air quality in excess of the criteria specified, all complete as specified.

EM.5. Litter Control

a. Method of measurement: Litter Control shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Litter Control, including but not limited to, monitoring for, furnishing, installing, and implementing control measures for the presence of litter/debris and vectors in excess of the criteria specified, providing temporary/daily cover, cleaning, and preventing and recovering blown trash, all complete as specified.

C. Mass Excavation and Embankment Construction (ME)

ME.1. Strip and Place Topsoil

a. Method of measurement: Strip and Place Topsoil shall be measured per Cubic Yard (CY), measured to the nearest Cubic Yard. Volumes will be calculated using AutoCAD Civil 3D surfaces generated from existing topography and bottom of cover soils surveys.

b. Basis of Payment: Contractor shall be paid a Unit Price per Cubic Yard (CY) for Strip and Place Topsoil, including but not limited to stripping/excavating, segregating Topsoil, hauling, stockpiling, placing, and grading cover soil materials, all complete as specified.

ME.2. Place Topsoil (Imported)

a. Method of measurement: Place Topsoil (Imported) shall be measured based on weight in tons (TON), measured to the nearest Ton. Place Topsoil (Imported) weight will be measured based on weight tickets.

b. Basis of Payment: Contractor shall be paid a Unit Price per ton (Ton) for Place Topsoil (Imported), including but not limited to, furnishing, hauling, stockpiling placing, and grading topsoil, all complete as specified.

ME.3. Common Fill Excavation/Placement

a. Method of measurement: Common Fill Excavation/Placement shall be measured per Cubic Yard (CY), measured to the nearest Cubic Yard. Volumes will be calculated using AutoCAD Civil 3D surfaces generated from top of common fill excavation and bottom of common fill excavation surveys.

b. Basis of Payment: Contractor shall be paid a Unit Price per Cubic Yard (CY) for Common Fill Excavation/Placement, including but not limited to excavating, hauling, stockpiling, processing, placing, compacting, and grading common fill materials, all complete as specified.

ME.4. Common Fill (Imported)

a. Method of measurement: Common Fill (Import) shall be measured based on weight in tons (TON), measured to the nearest Ton. Common Fill (Import) weight will be measured based on weight tickets.

b. Basis of Payment: Contractor shall be paid a Unit Price per ton (Ton) for Common Fill (Import), including but not limited to, furnishing, hauling, stockpiling, processing, placing, compacting, and grading common borrow (import), all complete as specified.

ME.5. Peat Excavation

a. Method of measurement: Peat Excavation shall be measured per Cubic Yard (CY) excavated, measured to the nearest Cubic Yard. Volumes will be calculated using AutoCAD Civil 3D surfaces generated from top of peat and bottom of peat surveys.

b. Basis of Payment: Contractor shall be paid a Unit Price per Cubic Yard (CY) for Peat Excavation, including but not limited to excavating, hauling, stockpiling, and placing of peat all complete as specified.

ME.6. Bedrock Excavation

a. Method of measurement: Bedrock Excavation shall be measured per Cubic Yard (CY) excavated, measured to the nearest Cubic Yard. Volumes will be calculated using AutoCAD Civil 3D surfaces generated from top of bedrock and bottom of bedrock surveys.

b. Basis of Payment: Contractor shall be paid a Unit Price per Cubic Yard (CY) for Bedrock Excavation, including but not limited to, excavating, cutting, chipping, hauling, stockpiling, and placing of bedrock, all complete as specified.

D. Waste Excavation and Disposal (WE)

WE.1. Waste Excavation and Disposal

a. Method of measurement: Waste Excavation and Disposal shall be measured based on weight in tons (TON), measured to the nearest Ton. Waste Excavation and Disposal weight will be measured based on weight tickets from a calibrated weigh scale at the licensed disposal facilities.

b. Basis of Payment: Contractor shall be paid a Unit Price per ton (Ton) for Waste Excavation and Disposal, including but not limited to, excavating, stockpiling, testing, hauling, disposal of waste at an off-site waste facility, all complete as specified.

E. Restoration (RE)

RE.1. Temporary Seeding and Mulching

a. Method of measurement: Temporary Seeding and Mulching shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for Temporary Seeding and Mulching will be the two-dimensional area.

b. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for Temporary Seeding and Mulching, including but not limited to, furnishing and installing seed and mulch, all complete as specified.

RE.2. General Seeding, Mulching, and Fertilizing

a. Method of measurement: General Seeding, Mulching, and Fertilizing shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for General Seeding, Mulching, and Fertilizing will be the two-dimensional area.

b. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for General Seeding, Mulching, and Fertilizing, including but not limited to, furnishing and installing seed, mulch, and fertilizer, all complete as specified.

RE.3. Erosion Control Blanket

a. Method of measurement: Erosion Control Blanket shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for Erosion Control Blanket will be the two-dimensional area.

b. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for Erosion Control Blanket, including but not limited to, furnishing and installing erosion control blanket, all complete as specified. Repair or replacement caused by damage from the Contractor will be at Contractor's time and expense.

RE.4. Wetland Buffer Seeding

a. Method of measurement: Wetland Buffer Seeding shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for Wetland Buffer Seeding will be the two-dimensional area.

b. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for Wetland Buffer Seeding, including but not limited to, furnishing and installing wetland buffer seeding, all complete as specified.

RE.5. Wetland Restoration Seeding

a. Method of measurement: Wetland Restoration Seeding shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for Wetland Restoration Seeding will be the two-dimensional area.

b. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for Wetland Restoration Seeding, including but not limited to, furnishing and installing wetland restoration seeding, all complete as specified.

F. Road Improvements (RI)

RI.1. Access Road Improvements

a. Method of measurement: Access Road Improvements shall be measured on a Single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Access Road Improvements, including but not limited to, cutting and removing existing road, spreading and compacting aggregate base, installing bituminous pavement, furnished and installed, all complete as specified.

RI.2. Access Road Repair

a. Method of measurement: Access Road Repair shall be measured on a Single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Access Road Repair, including but not limited to, cutting and removing top course of improved road, and installing bituminous pavement, furnished and installed, all complete as specified.

RI.3. Gravel Surfacing – Quarry Access Road and Ramp

a. Method of measurement: Gravel Surfacing – Quarry Access Road and Ramp shall be measured on a Single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Gravel Surfacing – Quarry Access Road and Ramp, including but not limited to, furnishing and installing geotextile, and furnishing, hauling, placing, compacting, grading, and maintaining gravel, all complete as specified.

RI.4. Bituminous Pavement - Transfer Station Access Road

a. Method of measurement: Bituminous Pavement - Transfer Station Access Road shall be measured on a Single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Bituminous Pavement - Transfer Station Access Road, including but not limited to, spreading and compacting aggregate base, installing bituminous pavement, furnished and installed, all complete as specified.

RI.5. Temporary Transfer Station Road

a. Method of measurement: Temporary Transfer Station Road shall be measured on a Single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Temporary Transfer Station Road, including but not limited to, furnishing, hauling, placing, compacting, grading, maintaining, and removing gravel, all complete as specified.

RI.6. Stormwater Management

a. Method of measurement: Stormwater Management shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Stormwater Management, including but not limited to, controlling and managing stormwater from the roads throughout the duration of the work, furnishing, trenching for, backfilling for, and installing stormwater piping, pipe bedding, riprap, granular filter, geotextile, and all associated apprentices, all complete as specified.

G. Miscellaneous (MI)

MI.1. Utility Company Allowance

a. Method of measurement: Utility Company Allowance shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Utility Company Allowance, as specified in paragraph 1.06 of this Section, all complete as specified.

MI.2. Electrical

a. Method of measurement: Electrical shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Electrical, including but not limited to, furnishing and installing all electrical, lighting, controls, and communication work (excluding utility company allowances, Transfer Station Utility Replacement, and Transfer Station Temporary Utilities, which are included under different Bid Items), furnished and installed, all complete as specified.

MI.3. Transfer Station Utility Replacement

a. Method of measurement: Transfer Station Utility Replacement shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Transfer Station Utility Replacement, including but not limited to, all replacement electrical, communication, watermain, and sanitary forcemain utilities (excluding utility company allowances, which is included under a different Bid Item), furnished, installed, and tested, all complete as specified.

MI.4. Transfer Station Temporary Utilities

a. Method of measurement: Transfer Station Temporary Utilities shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Transfer Station Temporary Utilities, including but not limited to, all temporary electrical, communication, watermain, and sanitary forcemain utilities (excluding utility company allowances, which is included under a different Bid Item), furnished, installed, tested, and removed, all complete as specified.

MI.5. Transfer Station Temporary Fencing and Gates

a. Method of measurement: Transfer Station Temporary Fencing and Gates shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Transfer Station Temporary Fencing and Gates, including but not limited to, furnishing, installing, and removing all temporary fencing, gates, and associated appurtenances, all complete as specified.

MI.6. Transfer Station Fencing and Gates

a. Method of measurement: Transfer Station Fencing and Gates shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Transfer Station Fencing and Gates, including but not limited to, furnishing and installing, all transfer station fencing, gates, and associated appurtenances, all complete as specified.

MI.7. Dump Fencing and Gates

a. Method of measurement: Dump Fencing and Gates shall be measured on a single Lump Sum (LS) unit.

b. Basis of Payment: Contractor shall be paid a Lump Sum (LS) Price for Dump Fencing and Gates, including but not limited to, furnishing and installing, all dump fencing, gates, and associated appurtenances, all complete as specified.

1.06 ALLOWANCES

A. Allowances shall be included in Contractor's Utility Company Allowance Lump Sum Price listed on the Bid Proposal, see paragraph 1.05K.MI.1 for additional information. Contractor's cost for overhead and profit shall be excluded in the allowance. Upon completion of allowance Work, provide receipts to Engineer. The Contract Price will be adjusted by Change Order if the actual cost is more than or less than the cost as specified in the allowance listed below.

B. Schedule of allowances:

Allowance	Amount	Description
1	$25,000	Utility company charges allowance: • Utility companies charges to provide temporary and final service for Existing Transfer Station
2	$25,000	Utility company charges allowance: • Utility company charges to provide and set the new transformer/pad and associated services for new landfill infrastructure and heat trace indicated on the Drawings.
Total	$50,000	

1.07 ALTERNATE BID ITEMS

Alt-A. Native General Seeding, Mulching, and Fertilizing

1. Method of measurement: Native General Seeding, Mulching, and Fertilizing shall be measured per Acre (AC) installed, measured to the nearest tenth of an Acre. Area for Native General Seeding, Mulching, and Fertilizing will be the two-dimensional area.

2. Basis of Payment: Contractor shall be paid a Unit Price per Acre (AC) for Native General Seeding, Mulching, and Fertilizing, including but not limited to, furnishing and installing seed, mulch, and fertilizer, all complete as specified.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 29 00

SECTION 01 31 00

PROJECT COORDINATION AND MEETINGS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes required meetings.

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 COORDINATION

A. Coordinate all aspects of the Work and assure that the Work of the various Specification Sections is completed in an orderly sequence incorporating all interdependent elements.

1.04 PRECONSTRUCTION MEETING

A. Engineer will schedule a preconstruction conference that shall be attended by Contractor and Subcontractors. Representatives of Owner and Engineer will also attend. The meeting will be scheduled prior to the beginning of any Work at the Site. The purpose of the meeting will be to ensure that all parties understand their responsibilities and the procedures that will be used to assure efficient and proper completion of the Work.

B. The agenda for the preconstruction conference is anticipated to include the following topics:

1. Distribution of Contract Documents;

2. Designation of responsible personnel for all parties, lines of communication, and lines of authority;

3. Role of Owner, Engineer, and Contractor;

4. Scope of Work;

5. Distribution and discussion of the tentative construction schedule;

6. Critical Work sequencing;

7. Procedures for submittal and field test reporting;

8. Record documents and reporting;

9. Site safety and security procedures;

10. Material import/export;

11. SWPPP compliance and other permit compliance;

12. Erosion control, tree protection, and turf establishment;

13. Traffic management, controls, and signage;

14. Quality Assurance and Quality Control Procedures

15. List of major subcontractors;

16. Procedures for processing Change Orders;

17. Use of Site (including remote Sites) including equipment, material storage, staging areas, temporary facilities and temporary controls;

18. Major equipment deliveries;

19. Housekeeping procedures; and

20. Other items for consideration during construction activities.

1.05 PROGRESS MEETINGS

A. Progress meetings will be scheduled by Engineer at a frequency, time, and location mutually agreeable to Owner, Contractor and Engineer.

B. Each Application for Payment may be reviewed during one Progress Meeting each month prior to Contractor's submittal.

C. Attend all meetings and coordinate the attendance of subcontractors whose Work may be in progress at the time, or whose presence may be required for any purpose.

D. The agenda for the progress meetings is anticipated to include the following topics:

1. Construction site safety issues;

2. Schedule/progress update;

3. Technical/construction issues;

4. Design issues;

5. SWPPP and other environmental issues;

6. Review status of required submittals;

7. Resolution of issues from previous meeting;

8. Contractor's anticipated activities for upcoming week; and

9. Administrative/purchasing issues.

1.06 PRE-INSTALLATION MEETINGS

A. Pre-installation meetings (when required) will be scheduled by Contractor a minimum of 2 weeks prior to Work requiring such meetings being performed.

B. Attendees at these meetings shall include Contractor, installing contractor, material supplier, Owner, and Engineer/Architect.

C. Meeting agenda items will include, but are not limited to, schedule and sequence, mock-up construction, product delivery and storage, material compatibility, Site restrictions, and coordination of any required testing and observation.

1.07 UNSCHEDULED MEETINGS

A. Attend unscheduled meetings that may be reasonably requested by Engineer or Owner.

1.08 SAFETY MEETINGS

A. Contractor shall, at a minimum, schedule daily safety meetings to discuss security issues, close calls, near misses and other safety related items in compliance with Specification 01 35 00, Construction Safety and Security.

1.09 AFTER HOUR CONTACTS

A. Prior to beginning any Work at the Site, submit to Engineer the names of at least three (3) employees of Contractor who may be contacted after normal working hours in the event of an unanticipated condition requiring immediate attention.

B. At least one person should be available at all times for immediate response to the Site within 2 hours of being called. That person shall have authority to make field decisions for Contractor.

1.10 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 31 00

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes submittal procedures.

1.02 GENERAL SUBMITTAL PROCEDURES

A. Transmit via email a PDF copy of each submittal labeled in sequential number order with the Project name, name of the submittal, and Specification Section and page number of these Contract Documents in which the submittal was requested. Indicate the type or purpose of the submittal, as more fully described elsewhere in this Section with regard to the Schedule of Submittals. A transmittal letter stating the same information shall accompany each submittal.

B. Transmit all submittals to Owner and Engineer at the email addresses given below:

1. Stephanie Ryno (as Owner) – stephanie.ryno@state.mn.us

2. Bryan Pitterle (as Engineer) - bpitterle@barr.com

C. Apply Contractor's stamp, signed or initialed certifying that review and verification of products required, field dimensions, adjacent construction activities, and coordination of information, is in accordance with the requirements of the Work and Contract Documents. Unstamped or unsigned submittals and submittals that have not been thoroughly checked by Contractor will be returned without action. Submittals from Subcontractors or vendors will be returned without action.

D. Owner and Engineer will accept submittals only from Contractor. Submittals from subcontractors, vendors, suppliers, or others will be returned without review or action.

E. Schedule submittals to expedite Project, and in accordance with the Schedule of Submittals to be prepared by Contractor. Coordinate submission of related items.

F. Identify all variations or deviations from the Contract Documents and identify alternative products or system limitations that may be detrimental to successful performance of the completed Work.

G. Provide an area for Contractor and Engineer review, stamps and comments.

H. Revise and resubmit submittals as required. Identify all changes made since previous submittal. Completion date extensions will not be granted for required submittal revisions.

I. Promptly distribute reviewed submittals to Subcontractors, Suppliers, and other concerned parties. Instruct parties to promptly report any inability to comply with provisions.

J. Do not proceed with any Work requiring review by Engineer until submittals have been reviewed and returned to Contractor.

K. All submittals that are made that are not specifically required by the Contract Documents will be returned without action.

L. All engineering data shall be identified by use of the nomenclature established by the Contract Documents. Equipment drawings shall have the equipment name and number clearly displayed. Material drawings shall have the structure name and structure number (when applicable) clearly displayed.

1.03 SCHEDULE OF OPERATIONS

A. Submit Schedule of Operations as described below within 10 days of Notice of Award.

B. The Schedule of Operations shall be a detailed progress schedule indicating the starting and completion dates of the various stages of the Work. Include adequate contingencies for unanticipated conditions such as resubmittals, bad weather and material shortages.

C. The Schedule of Operations shall be in the form of a horizontal bar chart (Gantt chart) with a separate line for each detailed portion of the Work. The chart shall have vertical lines showing the first work day of each week. Indicate early and late start dates, early and late finish dates, and duration of tasks. Sufficiently annotate the bar chart to define all symbols and abbreviations used.

D. If an extension in the Contract Time is granted in accordance with the terms of the Contract Documents, revise and resubmit the Schedule of Operations within 7 calendar days following the execution of the Change Order authorizing the change in Contract Time.

E. The Schedule of Operations will be reviewed by Engineer to determine if adequate detail has been presented for Engineer and Owner to schedule their activities. Engineer's review is not intended to include the adequacy of the schedule to meet the contract terms between Contractor and Owner. It is Contractor's sole responsibility to schedule its operations and provide all resources necessary to complete the Work in accordance with the approved Schedule of Operations. If Engineer requests additional detail in the Schedule of Operations, correct such deficiencies and resubmit the Schedule.

F. The Schedule of Operations shall be reviewed and updated by Contractor and provided to Owner and Engineer for review prior to weekly meetings.

1.04 SCHEDULE OF VALUES

A. Submit an electronic copy of Schedule of Values as described below within 10 days of Notice of Award.

B. The Schedule of Values shall be a detailed cost breakdown for all of the Work and shall include quantities and unit prices of items aggregating the Contract Price. This schedule shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such unit prices shall include an appropriate amount of overhead and profit applicable to each item of Work.

C. The Schedule of Values shall be organized in a tabular format with the following columns (clearly labeled) as a minimum:

1. ITEM NUMBER: Number items according to the Section of these Specifications to which it corresponds.

2. ITEM DESCRIPTION: Written description of what item consists of.

3. UNIT: The unit of measure upon which the unit price is based.

4. NUMBER OF UNITS: The number of units upon which the total price for the item will be based.

5. TOTAL UNIT PRICE: Sum of unit material price, unit labor price, and unit overhead and profit price.

6. EXTENSION: The total price for the item determined by multiplying the number of units by the total unit price.

D. The Schedule of Values shall include a row labeled TOTAL EXTENSION that shall be the sum of the extension column for each of the individual items. The dollar value shown as the total extension shall match exactly the Contract Price as shown in the Agreement.

E. Progress payments will not be made for shop-fabricated materials prior to delivery to the Site.

F. The Schedule of Values shall be accompanied by a schedule of anticipated monthly payment requests. This shall be based on the Schedule of Operations and Schedule of Values.

G. The Schedule of Values is subject to the review and approval of Engineer and Owner. If in the opinion of Engineer or Owner, the Schedule of Values does not contain sufficient detail or appears to be unbalanced, Engineer (or Owner) may ask Contractor to revise and resubmit the Schedule of Values and/or provide documentation to justify Contractor's distribution. Correct such deficiencies and resubmit.

1.05 SCHEDULE OF SUBMITTALS

A. Submit an electronic copy of Schedule of Submittals as described below within 10 days of Notice of Award.

B. The Schedule of Submittals shall be in tabular form listing all submittals required by the Contract Documents and the date on which Contractor will make submittal. As a minimum, the Schedule of Submittals shall consist of the following columns:

1. SUBMITTAL NUMBER: Number consecutively.

2. SECTION NO.: Section number or description of location in Contract Documents where submittal is requested.

3. PAGE NO.: Page number of section in Contract Documents where submittal is requested.

4. ITEM: Description of item or items to which submittal pertains.

5. SUBMITTAL REVIEW TYPE: A letter code indicating what type of submittal was requested. The type key shall be as follows:

    a. Submittal for Information or Documentation

    b. Submittal for Review

    c. Submittal for Approval

6. DEFICIENCIES: Manner in which submittal or proposed alternate product does not meet the requirements of the Contract Documents.

7. ANTICIPATED SUBMITTAL DATE: Date on which Contractor anticipates submittal to be delivered to Engineer.

8. RESPONSE REQUIRED: Indicate "yes" if Contractor anticipates response from Engineer and "no" if no response is anticipated.

1.06 REVIEW OF SUBMITTALS

A. Engineer's review of engineering data will cover only general conformity of the data to the Specifications and Contract Documents, external connections, and interfaces with equipment and materials furnished under separate specifications. Engineer's review does not indicate a thorough review of all dimensions, quantities, and details of the equipment, material, device, or item indicated or the accuracy of the information submitted; nor shall review by Engineer be construed as relieving Contractor from any responsibility for errors or deviations from the requirements of the Contract Documents.

B. All engineering data submitted, after final processing by Engineer and acceptance by Owner shall become a part of the Contract Documents and the work indicated or described thereby shall be performed in conformity therewith unless otherwise required by Owner.

1.07 SUBMITTAL FOR INFORMATION OR DOCUMENTATION

A. Submit 1 electronic copy to Engineer and 1 electronic copy to Owner.

B. Submittal shall be made at least 5 working days before the subject of the submittal is to be incorporated into the Work.

C. Submittal is for the purpose of formal verification that the subject of the submittal conforms to the requirements of the Specifications, for formal documentation of the Work, or both.

D. No action is required by Engineer. Engineer will generally notify Contractor if deficiencies are identified. However, Contractor is solely responsible for ensuring that the subject of the submittal conforms to the requirement of the Specifications.

1.08 SUBMITTAL FOR REVIEW

A. Submit 1 electronic copy to Engineer and 1 electronic copy to Owner.

B. Submittal shall be made at least 10 working days before the subject of the submittal is to be incorporated into the Work. Engineer will respond within 5 working days from receipt of submittal.

C. Submittal is for the purpose of providing opportunity to Engineer for review and comment on the subject of the submittal.

D. Engineer will respond to the submittal either with a list of comments or indicating no comments.

E. If Engineer's comments indicate a deficiency with respect to the requirement of the Specifications, Contractor shall amend the submittal and resubmit. Engineer will again respond to the resubmittal.

F. If Engineer's comments are in regards to an issue which, based upon the Contract, is at Contractor's discretion, Contractor shall furnish additional information, provide justification, and otherwise cooperate in addressing and resolving Engineer's comments.

G. Contractor shall remain solely responsible for ensuring that the subject of the submittal conforms to the requirements of the Specifications.

1.09 SUBMITTAL FOR APPROVAL

A. Submit 1 electronic copy to Engineer and 1 electronic copy to Owner.

B. Submittal shall be made at least 15 days before the subject of the submittal is to be incorporated into the Work. Engineer will respond within 7 days from receipt of submittal.

C. Submittals shall be stamped with Contractor's approval. Contractor's stamp shall be a representation that Contractor has assumed full responsibility for determining the submittal requirements and verifying that the subject of the submittal conforms to the requirements of the Specifications. Submittals not bearing Contractor's stamp will be returned without review or action.

D. Engineer will review, make notations as appropriate, stamp, and return submittals to Contractor. Engineer's stamp and Contractor's required action are described below:

1. APPROVED. Contractor may proceed without further action.

2. APPROVED AS NOTED:

   a. RESUBMITTAL NOT REQUIRED. Contractor shall review Engineer's notations and revise subject of submittal as required to conform to the requirements of the Drawings and Specifications before proceeding with the Work. Then, Contractor may proceed without further action.

   b. REVISE AND RESUBMIT. Contractor shall review Engineer's notations and revise subject of submittal as required to conform to the requirements of the Drawings and Specifications before proceeding with the Work. Then, Contractor shall submit a revised copy of the submittal and may proceed without further action.

3. NOT APPROVED (RESUBMIT). Contractor shall review Engineer's notations, revise subject of submittal as required to conform to the requirements of the Drawings and Specifications, and resubmit to Engineer for additional action.

4. NOT REVIEWED. Engineer has not reviewed the submittal but will keep the submittal with the project records.

E. No Work shall be performed in connection with the fabrication or manufacture of equipment and materials until the data therefor have been reviewed by Engineer except at Contractor's own risk and responsibility. Work may proceed when submittals have been returned marked APPROVED or APPROVED AS NOTED, provided the Work is performed in accordance with Engineer's notations.

F. If changes are made at the project site to correct manufacturing errors, revised drawings incorporating the changes shall be prepared and submitted to Engineer.

G. Drawings shall be in enough detail to indicate the kind, size, and arrangement of component materials and devices; the external connections, anchorages, and supports required; the dimensions needed for installation and correlation with the foundations; and other information specifically requested herein.

H. Each drawing submitted shall be black line on white background or blue line on white background. Print size shall not exceed 24 inches by 36 inches.

I. Each drawing submitted shall be clearly marked with the name of the project, the specification title, the specification number, Engineer's assigned number when so advised, and Contractor's name. If catalog pages are submitted, the applicable items shall be indicated.

1.10 RECORD DOCUMENTS

A. Submit record documents prior to Substantial Completion.

B. Record documents shall accurately reflect the as-constructed condition.

1.11 WARRANTY AND GUARANTEE CERTIFICATES

A. Submit warranty and guarantee certificates prior to Substantial Completion.

B. Warrantee and guarantee certificates shall be signed by Contractor, Installer, Manufacturer, and others as required by the Specifications.

1.12 OPERATION AND MAINTENANCE INSTRUCTIONS

A. Submit operation and maintenance instructions for all equipment and systems furnished.

B. Operating instructions shall be prepared specifically for each system or piece of equipment installed under this contract and shall consider the specific equipment and controls included.

C. All references, pictures, and diagrams regarding items not part of furnished equipment and systems shall be deleted. Instructions shall be complete for each separate system and shall cover:

1. Equipment functions, normal operating characteristics, and limiting conditions.

2. Assembly, installation, alignment, adjustment, and checking instructions.

3. Operating instructions for start-up routine and normal operation: regulations and control; shutdown; and emergency conditions.

4. Lubrication and maintenance schedules and instructions.

5. Guide to "troubleshooting."

6. Parts list with manufacturer's part numbers and parts diagrams.

7. Outline, cross sections, and assembly drawings; engineering data; and wiring diagrams.

8. Test data and performance curves, where applicable.

D. Submittal of operation and maintenance instructions shall be made prior to Final Completion.

1.13 ALTERNATE PRODUCTS

A. If Contractor proposes to use substitute products, then Contractor shall submit written application as required by the General Conditions. Alternate products or substitutions will not be pre-approved during bidding process, but can be evaluated after award of contact.

B. Submit copies of literature, drawings, and any other data necessary to substantiate that proposed substitute is equivalent or equal to the item named, and otherwise meets the conditions established in the General Conditions.

C. Do not proceed with product installation or use until written approval by Engineer is received in accordance with the General Conditions.

1.14 REQUESTS FOR INFORMATION

A. Contractor shall submit all requests for information to Engineer in writing on a standardized form, or accessible internet-based software as approved by the Owner. Requests for information shall be numbered sequentially and shall include the related specifications section number or drawing number.

B. Engineer will provide any revisions to the Specifications or Drawings in writing.

C. Contractor shall request written confirmation of any interpretations or clarifications provided verbally by Engineer or Company.

1.15 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 33 00

SECTION 01 35 00

CONSTRUCTION SAFETY AND SECURITY

PART 1: GENERAL

1.01 SUMMARY

A. Section includes health, safety, and security requirements.

B. Contractor shall be solely and completely responsible for safety procedures and programs in connection with the Work, including safety of Site conditions and the safety and health of all persons and property on portions of the Work Area affected by or used by Contractor, Contractor's employees, Subcontractors, Agents, and others during performance of the Work. This requirement will apply continuously and not be limited to normal working hours.

C. Observation of the Work and Contractor's performance by Owner, Owner's On-Site Representative, and Engineer is not intended to include review of the adequacy of Contractor's safety and health procedures and programs on or near the construction site. Contractor is solely responsible for the protection of property and the safety and health of its employees, subcontractors, suppliers, agents, and others on or near the site.

D. Contractor shall have authority to temporarily restrict anyone, including Engineer and/or Owner's On-Site Representative, from the Work Area who is not complying with Contractor's Health and Safety Plan (HASP). Any person so restricted from the Work Area shall be allowed to return to the area after meeting all provisions of Contractor's HASPs.

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. Occupational Safety and Health Administration (OSHA) Construction Industry Regulations (29CFR), specifically those set forth in Parts 1910 and 1926, in particular 1910.120 (Hazardous Waste Operations and Emergency Response)

1.03 SUBMITTALS

A. Submit Health and Safety Plan (HASP) for review within 5 days after Notice to Proceed. Work shall not proceed until HASP has been reviewed and written authorization to proceed has been issued.

1. Submittal of Contractor's HASP is to inform Owner, Owner's On-Site Representative, and Engineer so they can comply with HASP during performance of their on-site responsibilities.

2. Submittal of Contractor's HASP shall neither impose on Owner’s, Owner's On-Site Representative's, and Engineer’s responsibility for adequacy of HASP nor relieve Contractor from full responsibility therefore.

B. Provide Safety data sheets for all products brought to the Site.

C. Submit temporary fencing plan for review.

1.04 FEDERAL, STATE, AND MUNICIPAL REQUIREMENTS

A. The Work shall comply with all applicable Laws and Regulations, including, but not limited to, the Federal Occupational Safety and Health Administration (OSHA) regulations for construction and work at Hazardous Waste Operations and Emergency Response (HAZWOPER) sites, specific requirements under the Minnesota Pollution Control Agency (MPCA), state of Minnesota, and any local requirements of the County of Dakota County and the City of Burnsville that apply to the Work.

1.05 HEALTH AND SAFETY REQUIREMENTS

A. Contractor shall be solely and completely responsible for job-site conditions and safety procedures and programs on the Site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. Observation of the Work by Owner or Engineer is not intended to include review of the adequacy of Contractor’s safety procedures and programs on or near the Site.

B. Comply with all relevant OSHA standards.

C. Implement and enforce health and safety requirements and take necessary precautions and provide protection for the following:

1. Personnel working on or visiting Site, irrespective of employer.

2. Work and materials or equipment to be incorporated in Work area (on-site or off-site).

3. Other property at or adjacent to Site.

4. Public exposed to job-related operations or potential release of toxic or hazardous materials.

D. Submit site-specific Health and Safety Plan (HASP)

1. Contractor solely responsible for adequacy, preparation, monitoring, management, and enforcement of the HASP. The Contractor’s HASP shall, at a minimum, meet the regulatory requirements set forth by OSHA, specifically those set forth in the Code of Federal Regulations (CFR) at 29 CFR Parts 1910 and 1926, in particular 1910.120 (Hazardous Waste Operations and Emergency Response), and shall comply with all other appropriate state and federal safety regulations.

2. Submit for review HASP within 5 days after Notice to Proceed. Work shall not proceed until HASP has been received.

    a. Submittal of Contractor's HASP is to inform Owner and Engineer so they can comply with HASP during performance of their on-site responsibilities.

    b. Submittal of Contractor's HASP shall neither impose on Owner's or Engineer's responsibility for adequacy of HASP nor relieve Contractor from full responsibility therefore.

3. HASP to address, at a minimum, the following:

    a. Site description.

    b. Project activities and coordination.

    c. Hazard evaluation.

    d. On-site safety responsibilities.

    e. Work zones, if applicable.

    f. Worker medical surveillance.

    g. Personnel training.

    h. Atmospheric monitoring, if applicable.

    i. A detailed description of any work tasks that can be completed without HAZWOPER certification (e.g., truck drivers that do not exit the cab within an exclusion zone).

    j. A detailed description of the planned movement of labor, equipment and materials from and between work areas as work progresses, including measures to be employed to prevent recontamination of previously cleaned areas and contamination of areas that do not now contain hazardous materials.

    k. A detailed description of the personnel decontamination facilities to be employed including the planned phasing of decontamination facilities between work areas as the work progresses and the methods to be used to collect, store, treat, and ultimately dispose of personnel protective equipment and decontamination waters and wastes.

    l. A schematic and detailed description of the washdown area for decontamination of vehicles and equipment (aka, decontamination pad) and the methods to be used to collect above, treat and ultimately dispose of washdown decontamination waters and sediments. The decontamination pads shall, at minimum, consist of a shallow basin approximately 10 feet wide by 20 feet long covered with crushed

rock. A rattle plate shall then be placed on top of the rock. Decontamination pad shall be lined with 30 mil plastic (LLDPE or similar).

m. Personal protective equipment (PPE) to be used and conditions for use.

n. Personal hygiene and decontamination procedures for personnel.

o. Respirator protection program and procedures.

p. Emergency procedures, phone numbers, emergency vehicle routes, and nearest medical assistance.

q. Emergency, first aid, and fire protection equipment and supply.

r. Dust and particulate emission control.

s. Monitoring and mitigation of worker heat and cold stress.

t. The types of materials and substances likely to be encountered in the course of the Work.

u. Job and task hazard analyses.

v. Site visitors.

w. Site security, Site access, and Site control.

x. A spill containment program meeting the requirements of 29 CFR 1910.120 (j).

E. Contractor's HASP shall state that Contractor is responsible for exposure monitoring in accordance with 1910.120(b)(4)(ii)(E): *"Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used."*

F. Contractor is responsible for its Subcontractors and Suppliers and shall ensure they follow Contractor's HASP.

G. Contractor's HASP shall designate a qualified individual to act as Contractor's Site Safety Officer for purposes of assuring compliance by all persons with Contractor's HASP. Contractor's Site Safety Officer shall be present on the Site during all activities that could potentially result in exposure to contaminated soil and/or groundwater, specifically including but not limited to, excavation and backfilling, and demolition activities. At other times of routine construction, Contractor shall determine the need for the presence of the designated Site Safety Officer. However, the Site Safety Officer (or a designated alternate) shall be available by telephone continuously during the Contract Time, and shall be available to respond to the Site within two hours at any time following request by Contractor, Engineer, or Owner.

H. Contractor shall hold daily safety meetings that shall be attended by Contractor's Site Safety Officer. That meeting shall also be attended by Contractor's resident supervisors, all Contractor's employees at the Site, and Subcontractors involved in the Work during the day. Owner's On-Site Representative may attend safety meetings. The topic of the meeting shall be limited to safety and security, and attendees shall, at a minimum, discuss safety problems, security, close calls, near misses, the potential risk of planned activities, coordination of equipment movement/Work Area, and requirements related to upcoming Work.

I. Contractor will not be required to supply personal protective equipment or monitoring equipment for any persons other than Contractor's employees, as well as any subcontractors and suppliers. However, Contractor shall make decontamination facilities available to those persons who reasonably require access to the Work, including Owner, Engineer, and regulatory authorities. Contractor shall be solely responsible for assuring that all persons comply with Contractor's HASP. Contractor shall not unreasonably restrict access to the Work Area and shall not proceed with Work that Owner's On-Site Representative requests to observe during such time as Owner and Owner's On-Site Representative are being denied access to the Work Area because of non-compliance with Contractor's HASP.

J. Owner or Owner's Representative will also prepare a HASP for its employees to follow when on Site. At Contractor's request, Owner or Owner's Representative will make HASP available as a reference.

K. Inform Owner immediately of accidents, near misses, and potential hazards and be responsible for giving the required notice of accidents to government authorities as required by law.

L. Contractor shall be responsible for general safety and conduct of employees and ensure that:

1. Equipment is operated and maintained only by persons qualified by adequate training and experience.

2. Employees do not trespass beyond boundaries established for work of this Contract unless required to do so in pursuance of work of this Contract.

3. All protective personnel safety equipment is worn or used in keeping with the hazards of work being carried out and as required by Owner.

4. Ensure employees are familiar with safety rules and regulations on the site.

M. Contractor shall be responsible for any safety violation and/or fine that may occur because of any neglect by Contractor, Contractor's employees, Contractor's subcontractors, or any third party under Contractor's supervision or direction.

N. Contractor shall provide safe access to all portions of the Work for use by Owner, Engineer, and regulatory entities having jurisdiction in the performance of their observation duties. Said access shall conform to applicable Laws and Regulations and to all requirements of any regulatory agency or entities who claim jurisdiction over the safety of the Project area. If Owner is unable to observe Contractor's Work, due to conditions, which in the opinion of Owner are, unsafe,

Owner's payment for such Work may be withheld until Work has been determined to be in compliance with the Contract Documents.

O. Provide suitable barricades around all excavations, openings and other potentially dangerous areas and remove the barricades when they are no longer necessary.

P. Provide adequate lighting at all excavations, openings and other potential dangerous areas during the hours of darkness.

Q. Remove snow as necessary for safe and adequate performance of the work.

R. Provide and use Ground Fault Interrupters (GFI's) in any damp, wet, or any conditions requiring such protection.

S. Provide locks for each employee for the purpose of locking out equipment.

1.06 HAZARD COMMUNICATION PROGRAMS

A. Contractor shall be responsible for coordinating any exchange of safety data sheets or other hazard communication required to be made available to or exchanged among Contractor, Subcontractors, Engineer, and/or Owner, in accordance with Laws and Regulations, Owner's requirements, or as specified in the Contract Documents.

1.07 EMERGENCIES

A. In emergencies affecting the safety or protection of persons, the Work, or any property adjacent to the Work, Contractor, without special instruction from Owner or Engineer, is obligated to act to prevent threatened damage, injury, or loss. Give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been created by such emergency. If Engineer or Owner determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Change Order will be issued to document the consequences of such action.

1.08 SITE SECURITY

A. Submit temporary fencing plan to address, at a minimum, the following:

1. Necessary measures to maintain the perimeter, prevent unauthorized access to Site, and protect Contractor, Owner, public, and existing facilities.

2. Temporary fencing phasing.

B. Provide temporary commercial grade chain link fencing, barricades, and gates until final fencing is installed as necessary.

C. Contractor shall be responsible for site security throughout construction activities.

D. Maintain security measures and infrastructure throughout construction activities.

E. Maintain access to and security around Transfer Station at all times.

1.09 FUEL STORAGE AND SPILLS

A. Contractor shall be responsible for safe and proper fuel storage in accordance with the material data sheet, legal requirements, and Owner requirements. At a minimum, temporary fencing and barricades shall be 6' high.

B. Contractor shall be responsible for safe and proper refueling and fuel handling in accordance with the material data sheet, legal requirements, and Owner requirements.

C. All spills shall be contained and reported immediately in compliance with Contractor's HASP, the material data sheet, legal requirements, and Owner requirements.

1.10 CONTROLLED SUBSTANCE

A. Alcoholic beverages, drugs, or personnel under their influence are not allowed on Site. Any Contractor's employee in violation of this policy will be permanently barred from the property.

1.11 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 35 00

SECTION 01 45 00

QUALITY CONTROL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes general quality control, including workmanship, manufacturer's instructions and certificates, and code compliance.

B. Contractor shall retain an independent registered land surveyor licensed in the State of Minnesota for performing quality control on line and grade of the Work. The quality control survey data shall be available for review at all times by Owner or Engineer.

C. Contractor shall retain an independent soil testing firm for performing soil material verification and compaction testing. The quality control compaction testing data shall be available for review at all times by Owner or Engineer.

1.02 GENERAL

A. Maintain quality control over Suppliers, manufacturers, products, services, Site conditions, and workmanship to produce Work of the specified quality.

B. Maintain records of tests and results for reference by Engineer and Owner at any time.

C. Furnish copies of all test results and quality control procedures as part of Record Documents.

D. Comply fully with manufacturer's instructions, including each step in sequence.

E. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

F. Obtain copies of, and meet the requirements of, reference specifications. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

G. Comply with specified reference standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

H. Perform Work by persons qualified to produce workmanship of specified quality. Use persons licensed to perform Work where required by these Specifications or Laws and Regulations.

I. Secure products and Work in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

J. Materials furnished and finished or intermediate stages of the Work shall be sampled, tested and inspected as specified in the individual Specification Sections and as required by reference specifications.

K. Performance of tests or observations by Engineer or Owner are for the sole benefit of Engineer and Owner, and are not intended to replace Contractor's quality control program. Contractor is solely responsible for establishing and implementing a quality control program to ensure that the Work is in accordance with the Contract Documents.

L. It is Contractor's responsibility to notify Engineer when Contractor believes Work (or intermediate stages or parts of Work) is of specified quality, and to permit Engineer to perform independent tests or analyses.

M. The contractual relationship of the parties to the Agreement shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.03 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. American Society for Testing and Materials (ASTM)

a. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3))

b. D1140: Standard Test Methods for Determining the Amount of Material Finer than 75-mm (No. 200) Sieve in Soils by Washing

c. D1556: Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method

d. D2216: Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

e. D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

f. D2488: Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)

g. D5519: Standard Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials

h. D6913: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

i. D6938: Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.04 SUBMITTALS

A. Quality Control Program

1. Quality control program that describes the process for ensuring that materials, measurements, and workmanship meet the Project requirements.

2. Provide specifications and quality assurance/quality control (QA/QC) criteria describing how Contractor will collect and evaluate survey data and verify all drawing dimensions used to guide Work operations.

B. Submit for review the testing company qualifications for field testing and laboratory testing including testing firm's name, address, contact name, and phone number.

C. Survey plan.

D. Results of the required surveys.

1. Submit for review within 24 hours of receipt all certification survey results. Engineer will respond within 24 hours. The submittal must be approved by Engineer before placement of overlying materials.

2. Submit survey data on a daily basis for each day that survey work is performed.

3. Prior to acceptance of the Work, Contractor shall submit for documentation a tabulation, reproducible paper, and electronic (AutoCAD) format, of all results of survey work performed. The tabulation shall be certified by the registered land surveyor. The tabulation shall contain the following information for each survey location:

a. A unique identification number.

b. Project coordinates.

c. Elevation of the finished surface of each material (existing ground, bottom of excavation, top of common fill, top of topsoil, top of pipe, etc.).

d. Thickness of each material.

E. Record Drawings

1. Submit for record certification survey record drawings containing the unique identifications numbers and material thicknesses for each survey point. The drawings shall use a scale of 1 inch = 50 feet, shall schematically represent the facility similar to the coordinate and elevation data sheet in the Drawings, and shall be submitted in reproducible paper and electronic (AutoCAD) format. The drawings shall be prepared and

the reproducible paper plot certified by the RLS who performed the certification surveys during construction. At a minimum, the following plan views shall be submitted:

a. Top of existing ground

b. Top of waste to be excavated

c. Bottom of excavation

d. Top of common fill

e. Top of topsoil

f. Topographic survey of the completed site including roads, fencing, piping, and ditches.

F. Submit for review results from borrow source evaluation testing (if applicable). Submit one copy to Engineer a minimum of 10 days prior to delivery of material to the Site.

G. Draft copies of field testing daily, or on a frequent and regular basis, as directed. All field testing results submitted to Engineer shall be submitted in either hardcopy or electronic PDF format.

H. Submit for documentation the results of all soil material and compaction testing performed. Test results shall be submitted on a daily basis for each day that compaction testing is performed. Test results shall also be compiled in a report-format and submitted prior to substantial completion of Work.

I. Certified written report of each inspection, test, or similar service.

1. All reports shall be submitted either in hardcopy or electronic PDF format. Submittals shall be in accordance with Section 01 33 00 Submittal Procedures.

2. Written reports of each inspection, test, or similar service include, but are not limited to, the following:

a. Date of issue

b. Project title and number

c. Name, address, and telephone number of testing agency

d. Dates and locations of samples and tests or inspections

e. Names of individuals making the inspection or test

f. Designation of the Work and test method

g. Identification of product and specification section

h. Complete inspection or test data

i. Test results and an interpretation of test results

j. Ambient conditions at the time of sample taking and testing

k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements

l. Name and signature of Inspector

m. Recommendations on retesting

3. Upon Substantial Completion of Work, Contractor shall submit a certified Record Test Report of all tests performed for record documentation.

a. The Record Test Report shall contain all test reports generated during the Work. All test reports shall be organized by date.

b. The Record Test Report shall include an index of all documentation enclosed in the report.

c. The Record Test Report shall be submitted to Engineer in either hardcopy or electronic PDF format.

1.05 RESPONSIBILITIES

A. Contractor Responsibilities

1. The Contractor shall be responsible for all testing not explicitly assigned to the Owner.

2. All inspections, tests, retests and other quality-control services specified elsewhere in the Agreement and required by authorities having jurisdiction shall be at the expense of Contractor.

3. Unless otherwise indicated as the responsibility of another identified entity, Contractor shall schedule all inspections, tests, and other quality-control services specified elsewhere in the Agreement and required by authorities having jurisdiction.

4. Where individual sections specifically indicate that certain inspections, tests, and other quality-control services are Owner's responsibility, Contractor shall aide in coordinating to schedule these services if necessary. Owner shall employ and pay a qualified independent testing agency to perform these quality-control services. Costs for these services are not included in the Contract Sum.

5. Contractor shall coordinate with Engineer and Owner's On-Site Representative to obtain clarification of Agreement, Specifications and testing criteria when necessary.

6. Contractor shall coordinate with Engineer and Owner's Representative to furnish Engineer and Owner's On-Site Representative with access to witness and observe all sampling, testing activities and samples.

7. Contractor shall furnish all submittals as specified. All submittals by Contractor shall be at Contractor's expense.

8. Contractor shall retain an independent registered land surveyor licensed in the State of Minnesota for performing quality control on line and grade of the Work. The quality control survey data shall be available for review at all times by Owner or Engineer.

9. Contractor shall retain an independent soil testing firm for performing soil material verification and compaction testing. The quality control compaction testing data shall be available for review at all times by Owner or Engineer.

B. Retesting. Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Agreement requirements, regardless of whether the original test was Contractor's responsibility.

1. The cost of retesting Work, revised or replaced by Contractor, is Contractor's responsibility where required tests performed on original Work indicated noncompliance with Agreement requirements.

2. All activities to correct Work and retesting shall be at the expense of the Contractor until all Work meets specified criteria and acceptable test results are obtained on the Work.

C. Contractor shall cooperate with Engineer, Owner, Owner's On-Site Representative and agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Contractor shall notify the entity sufficiently in advance of operations to permit personnel to perform testing or to witness and observe testing. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.

2. Furnish incidental labor and facilities necessary to facilitate safe inspections and tests.

3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.

4. Provide facilities for storage and curing of test samples.

5. Deliver samples to testing laboratories.

6. Provide information, mix designs or other product information requested by the entity performing, witnessing or observing testing.

7. Provide security and protection of samples and test equipment at the Project site.

D. Owner Responsibilities

1. At Owner's or Engineer's discretion, supplemental inspection and testing services may be performed by Owner, Engineer, or testing agency to verify compliance with Contract Document requirements. These services are at the expense of Owner and are intended to supplement, but not replace, the testing services at the expense of Contractor. These services do not relieve Contractor of responsibility to comply with Contract Document requirements and may be used to identify or demonstrate needed work to ensure compliance.

2. Engineer and Owner reserve the right to witness and observe all testing.

E. Engineer Responsibilities

1. Engineer will provide survey control of the Work Area as shown on Drawings.

2. Engineer will coordinate with Contractor to observe all sampling and testing activities.

3. Engineer will review all submittals in timelines specified in Section 01 33 00 Submittal Procedures.

4. Engineer will collect additional samples or conduct additional testing deemed necessary by Engineer or Owner.

1.06 CONSTRUCTION QUALITY CONTROL - SURVEY

A. Contractor shall provide construction survey staking based on primary survey control to establish line and grade of the Work.

B. Visually inspect lines between survey points to verify uniform slopes. Irregularities which would cause concentration of runoff, impede sheet flow of runoff, or would otherwise make the slope more susceptible to erosion, as determined by Engineer or Owner's On-Site Representative, shall be corrected as directed by Engineer or Owner's On-Site Representative.

C. Contractor shall retain an independent registered land surveyor (RLS) licensed in the State of Minnesota for performing certification surveys of the Work. Contractor shall be responsible to conduct certification surveys signed by a RLS of features identified below and as shown on the Drawings before work is covered. Contractor shall notify Engineer or Owner's On-Site Representative prior to completing the certification surveys to allow on-site review. The certification surveys shall be conducted on a minimum 50-foot by 50-foot grid including shots at all major grade breaks designated by Engineer. The survey grid shall be established in all final covered areas. Contractor's RLS will conduct certification surveys for the following features:

1. Existing ground

2. Top of waste to be excavated

3. Bottom of excavation

4. Top of common fill

5. Top of topsoil

6. Topographic survey of the completed site including roads, fencing, piping, and ditches.

D. For elevation and grade verification on the piping (potable waterline, storm sewer, and sanitary sewer), the following points shall be surveyed:

1. Survey shots should be taken on the top of pipe elevations at a maximum of 25-foot intervals (lineal) in the areas where pipe has little or no significant change in elevation, and at changes in grade. Coordinate the location of these shots with the Owner's On-Site Representative.

E. Contractor shall not cover work on which survey or measurements are required until Engineer and Owner's On-Site Representative has approved the Work. Contractor's RLS shall meet with Owner's On-Site Representative at the end of each day that certification survey data is collected and record, via handwriting, every survey shot collected that day. All certification survey shots shall be checked for specification compliance, including adequate shot frequency, by the RLS and Owner's On-Site Representative at the end of each day. Engineer shall be immediately notified if a certification shot is found to be out of compliance.

F. Contractor shall be responsible for the cost of additional surveys for any work that does not meet specified grade or thickness tolerances at the time the initial certification survey is conducted on any area.

1.07 CONSTRUCTION QUALITY CONTROL – SOIL TESTING

A. Contractor shall retain an independent soil testing firm. Contractor's independent soil testing firm shall verify that soil material and compaction during construction is in conformance with these Specifications. Compaction test results will be used by Owner to demonstrate compliance with requirements. Soil testing shall be performed by Contractor in accordance with Table 1. Tests shall be performed at random locations as such that the test results may be considered representative of the entire area. Testing shall be performed at locations identified by the Owner's On-Site Representative at the minimum frequency described in Table 1.

B. It is Contractor's sole responsibility to perform pre-construction testing deemed necessary to satisfy the requirements of these Specifications.

C. Work failing to meet these Specifications shall be repaired and retested at Contractor's expense.

1.08 QUALITY ASSURANCE

A. Qualifications for Service Agencies. Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

2. Test personnel shall be qualified and hold certifications to perform quality control testing work.

3. All inspection and testing service agencies shall be pre-approved by the Owner.

1.09 NON-CONFORMANCE OR DEVIATIONS

A. Any (a) condition that may have a potential adverse effect on the safety, operability, reliability, integrity, operational life, or maintenance of the material or component, or (b) any failure to comply with any quality assurance or quality control requirement in the Agreement, shall be a non-conformance or deviation. Examples include (i) physical defects in equipment, structures, systems, or components, (ii) test failures, (iii) any equipment out-of-tolerance, or (iv) any failure to comply with specifications, inspection or test procedures. No deviation or non-conformance from the Agreement requirements shall be acceptable unless approved in writing by Owner and only upon prior full disclosure by Contractor to Owner of all relevant facts and circumstances. Such written approval by Owner shall not be unreasonably withheld. All notifications and approvals related to any such non-conformances shall be in written form and shall be retained by Contractor.

B. Document all non-conformances and deviations in detail and promptly submit such documentation to the Owner's representative for review, acceptance, and resolution. Promptly (but in any event within twenty-four (24) hours) notify Owner of all non-conformances of material and components dispositioned as use-as-is or repair and shall provide Owner with copies of all non-conformance reports relating thereto within ten (10) days of Contractor's discovery of any such non-conformance.

C. Promptly (but in any event within twenty-four (24) hours) notify Owner of all non-conformances in material or components that Contractor intends to remediate through rework and shall provide Owner with copies of all non-conformance reports relating thereto.

D. All notifications and approvals related to any non-conformances shall be in written form and shall be retained by Contractor.

E. Make an initial response within thirty (30) days of receipt of all inspection/source verification deficiency reports and surveillance finding reports initiated by Owner.

F. Owner reserves the right to charge to Contractor any additional cost of inspection when material or workmanship is not ready at the time specified by Contractor for inspection, or when re-inspection is necessitated by prior rejection. If required by Owner, Work must be uncovered for observation and/or inspection purposes and replaced at Contractor's expense.

G. In the event Owner places conditions or restrictions on Contractor as a result of non-conformances or sub-standard implementation of the Quality Management Program

requirements, Contractor shall allow Owner to perform additional surveillance and inspection activities to ensure corrective actions are satisfactory to Owner for the identified conditions or restrictions, at no additional cost to Owner.

1.10 MILL TESTS

A. Mill or shop tests shall be conducted, and test results, certificates and/or affidavits shall be submitted, as required in the individual Specification Sections. Make submittals in accordance with the requirements of Specification Section 01 33 00, Submittal Procedures. Mill tests refer to those tests typically performed as part of the manufacturer's standard quality control program, and not specifically performed for this Project.

B. Mill or shop tests shall be accomplished by the manufacturer, fabricator, or Supplier of the product. Mill tests may be conducted by an independent testing laboratory, and shall be conducted in accordance with specific or standard procedures as specified. Applicable ASTM procedures shall be used if other procedures are not specifically required.

C. The cost of mill tests shall be incidental, and no additional compensation will be provided.

1.11 FACTORY TESTS AND OBSERVATION

A. Factory tests shall be conducted and test results, certificates and/or affidavits shall be submitted as required in the individual Specification Sections. Make submittals in accordance with the requirements of Specification Section 01 33 00, Submittal Procedures. Test results shall be submitted prior to the shipment of the tested equipment.

B. Factory tests shall be conducted to establish the performance, capacity, rating, efficiency, or function of process, mechanical, electrical, or other equipment or materials. Factory tests refer to those tests made by manufacturers, fabricators, Suppliers, or Contractor specifically for this Project.

C. Factory tests shall be conducted in the factory or shop where the item is being fabricated. The test shall be set up and accomplished by the equipment manufacturer who shall provide all shop space, tools, equipment, instruments, personnel, and other facilities required for the satisfactory completion of each test.

D. Factory tests may be witnessed by Owner, or Engineer, or their representatives. Notify Engineer at least 10 working days in advance of testing to allow Engineer or Owner opportunity to witness. Failure of Contractor to notify will be grounds for rejection of the test results, and Contractor may be required to repeat testing and/or replace affected Work.

E. The cost of factory tests shall be incidental, and no additional compensation will be provided.

1.12 LABORATORY TESTS

A. Laboratory tests shall be conducted, and test results, certificates, and/or affidavits shall be submitted, as required in the individual Specification Sections. Make submittals in accordance with the requirements of Specification Section 01 33 00, Submittal Procedures. Laboratory tests refer to those tests made by manufacturers, fabricators, Suppliers, or Contractor specifically for this Project and conducted by an independent testing laboratory.

B. All laboratory tests shall be made by an independent testing laboratory approved by Owner or Engineer. Those tests shall be performed in accordance with the specified procedures or in accordance with applicable ASTM procedures if no reference is included.

C. Laboratory tests may be witnessed by Owner, or Engineer, or their representatives. Notify Engineer at least 2 working days in advance of testing to allow Engineer opportunity to witness. Failure of Contractor to notify will be grounds for rejection of the test results and may require Contractor to repeat testing and/or replace affected Work.

D. Contractor shall conduct routine testing of materials used in the Work to satisfy itself that the quality of the Work meets the requirements of the Contract Documents. Owner or Engineer may also conduct routine sampling and analysis to ascertain the same. Where laboratory testing or material specifications or quality control requirements are specified in the individual Specification Sections, Contractor shall not proceed with phases of the Work until Owner or Engineer have had opportunity to collect samples or conduct testing necessary to establish the specified quality of the Work. Such instances may include, but are not limited to, soil compaction control, soil gradation testing, moisture content testing, testing of finishes, testing for chlorine residual or other water quality parameters, testing of roofing samples, or any other specified tests.

E. Contractor shall pay for all specified laboratory testing. Owner will pay for testing Owner desires other than that required by these Specifications. If testing by Owner identifies defective Work, Contractor shall pay for all subsequent sample collection and testing costs performed by Owner or Engineer that are required by Engineer or Owner to convince Owner that the defective Work has been repaired or replaced.

1.13 FIELD TESTS

A. Conduct field tests and submit test results, certificates, and/or affidavits as required in the individual Specification Sections. Make submittals in accordance with the requirements of Specification Section 01 33 00, Submittal Procedures.

B. Conduct field tests in accordance with the individual Specification Sections to establish the quality of complete systems or individual components of process, mechanical, and electrical equipment including, but not limited to, piping systems, electrical systems, control systems, ventilation systems, heating systems, water mains, sewers and drains, tanks and vessels, and similar facilities.

C. Conduct field tests to establish the performance, capacity, function, efficiency, tightness, leakage, operating characteristics, or other special requirements. Conduct tests in accordance with specified procedures or standards. Use applicable standards or codes where none are specified.

D. Field tests shall be set up and conducted by party responsible for performing the test. Provide all tools, equipment, instruments, personnel and other facilities required for the satisfactory completion of each test, and observation of such tests by Owner or Engineer.

E. Field tests may be witnessed by Owner, or Engineer, or their representatives. Notify Engineer at least 4 working days in advance of testing to allow Owner or Engineer opportunity to witness. Failure of Contractor to notify will be grounds for rejection of test results and Contractor may be required to repeat testing and/or replace affected Work.

1.14 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 45 00

Table 1: Minimum Frequencies of Construction Material Tests

Construction Material	Test Description	Test Method	Sampling Location	Minimum Preconstruction Source Testing Frequency	Minimum Construction Testing Frequency
Common Fill	Soil Description	ASTM D2488	Source/In-Place	1/10,000 CY (Import only)	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
	Soil Classification	ASTM D2487	Source/In-Place	1/10,000 CY (Import only)	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
	Particle Size Distribution	ASTM D6913, D1140	Source/In-Place	1/10,000 CY (Import only)	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
	Moisture Density	ASTM D698	Source/In-Place	1/10,000 CY (Import only)	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
	Water Content	ASTM D2216	Source/In-Place	1/10,000 CY (Import only)	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
	In-Place Density and Water Content	ASTM D6938 or D1556	In-place	N/A	Road Embankment: 1/2,000 CY General Common Fill: 1/10,000 CY
Topsoil	Soil Description	ASTM D2488	Source/In-Place	3/source (Import only)	1/10,000 CY (Borrow only)
	Soil Classification	ASTM D2487	Source/In-Place	3/source (Import only)	1/10,000 CY (Borrow only)
	Particle Size Distribution	ASTM D6913, D1140	Source/In-Place	3/source (Import only)	1/10,000 CY (Borrow only)
	Nutrient Content & pH	Per Agricultural Soils Testing Laboratory	Source/In-Place	2/source (Import only)	1/15,000 CY (Borrow only)
	Organic Content	Per Agricultural Soils Testing Laboratory	Source/In-Place	2/source (Import only)	1/15,000 CY (Borrow only)
	Fertilizer Requirements	Per Agricultural Soils Testing Laboratory	Source/In-Place	2/source (Import only)	1/15,000 CY (Borrow only)
Aggregate Base/Gravel Surfacing/ Structural Fill/Pipe Bedding/Granular Filter	Particle Size Distribution	ASTM D6913, D1140	Source	2/source	N/A
	Moisture Density	ASTM D698	Source	2/source	N/A
	In-Place Density and Water Content	ASTM D6938 or D1556	In-Place	N/A	as directed by Owner
Riprap	Soil Classification	ASTM D2487	Source	2/source	N/A
	Particle Size Distribution	ASTM D5519	Source	2/source	N/A

SECTION 01 51 00

TEMPORARY UTILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes temporary utilities

B. Related Sections

1. Section 33 05 28 Trenching and Backfilling for Utilities
2. Section 33 10 00 Water Utilities
3. Section 33 30 00 Sanitary Utilities
4. Section 33 40 00 Storm Drainage Utilities

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 TEMPORARY UTILITIES

A. Water

1. Provide potable water for Contractor's personnel use at the Site.
2. Obtain and supply non-potable water for on-site moisture conditioning of soils and dust control as needed at the Site.
3. Water will be used only to the extent required by construction.

B. Sanitary Facilities

1. Provide sanitary facilities for use by Contractor's employees, Subcontractors, and Suppliers working on the Site, as well as for use by Engineer and Owner.
2. Provide sanitary facilities with lockable doors when in use.
3. Maintain in a clean and useable condition.
4. Maintain until completion of the Work, unless Engineer or Owner approves earlier removal.

C. Electricity and Lighting

1. Contractor shall arrange for and furnish all electric power as necessary for completion of the Work. Should Contractor need electric power service for Contractor's purposes, it shall be the Contractor's responsibility to arrange for and pay for such service. Contractor shall include costs for electric power in Contract Price and no additional compensation will be provided.

2. Provide temporary lighting to sufficiently illuminate Work areas. Protect lights with guard cages.

3. Comply with all applicable OSHA requirements.

4. Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets.

5. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for use with power tools and equipment. Provide only grounded extension cords and use "hard service" cords where exposed to abrasion or traffic. Use single lengths of extension cord or waterproof connectors to connect separate lengths of extension cords.

D. Fire Protection

1. Contractor shall make all arrangements necessary to assure that the Site and the Work have adequate fire protection services throughout the duration of the Work.

E. Telephone/Internet/Wi-Fi

1. Contractor shall arrange for and furnish telephone and internet service and equipment to the extent deemed necessary by contractor.

2. At a minimum, Contractor to provide high speed internet service with wireless router for use in Contractor's field office and Owner's and Owner's On-Site Representative's field office.

1.04 COORDINATION

A. Coordinate any required utility connections with Owner and utility companies.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 TEMPORARY UTILITIES

A. Examine and verify site acceptability to receive and construct temporary utilities.

B. Provide and maintain temporary utilities and facilities required for personnel use and construction-related project work.

C. Disconnect any temporary power and water supply upon project completion and remove Contractor-supplied sanitary facilities upon project completion.

END OF SECTION 01 51 00

SECTION 01 52 00

CONSTRUCTION FACILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes construction facilities.

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 FIELD OFFICE

A. Field Office

1. Provide a weather-tight field office for use by Contractor and Subcontractors.

2. Field office to include designated space for use by Owner and Owner's On-Site Representative in location approved by Owner.

a. The space shall have a minimum of 120 square feet of floor area, be equipped with a desk, a table, and three chairs. The space shall be furnished with electrical service, operable lighting, heat, and air conditioning. This office space may be located in a trailer with other facilities but must be accessible to Owner and Owner's On-Site Representative at all times and must be secured by a separation wall and lockable door.

3. Coordinate Field Office location with Owner.

1.04 TEMPORARY ENCLOSURES AND HEAT

A. Provide secure, weathertight temporary enclosures and closures as required to retain heat so that specified temperatures can be maintained for the performance of the Work and to protect previously completed Work.

B. Unless specifically stated otherwise, temperatures inside the enclosures shall be not less than 60°F for 48 hours prior to and during the time when concrete work, cement finishing, masonry work, or painting or sealing are being done or being cured, and not less than 50°F where any personnel are working or where pipes contain water or other fluids that could freeze.

C. Provide temporary closures over wall and floor openings.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 52 00

SECTION 01 55 00

TRAFFIC CONTROL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes access and traffic control.

1.02 SUBMITTALS

A. Traffic Control Plan

1. Submit traffic control plan to the City of Burnsville and Dakota County for approval and to Engineer for documentation prior to implementation. Plan shall include proposed signage and proposed location of all signage, flagmen and detours. Plan must be approved by the City and County prior to implementation.

B. Transfer Station Temporary Access Road Plan

1. Submit transfer station temporary access road plan for approval. Plan shall include proposed temporary access road location, widths, and grades and proposed schedule for transfer station temporary and final access roads.

1.03 ROADS

A. Maintain roads to provide access to the Work and all of Owner's and other's facilities for the entire duration of the construction. Roads shall be passable for their intended use at all times in all weather conditions and shall be maintained in a graded and rut-free condition.

B. Sequence Work within the right-of-way of public roads to minimize public disturbance.

C. Provide and maintain temporary surfacing of roads and driveways necessary to maintain those in passable condition under all weather conditions by typical passenger vehicles. Temporary surfacing shall consist of graded rock and granular material as required to provide a stable driving surface.

1.04 SIGNS, FENCES, BARRICADES, TRAFFIC, AND WATCHPERSON

A. No signs, billboards, or other advertisements shall be erected on the premises by Contractor without Owner's written permission.

B. Furnish and maintain all warning lights, barricades, informational signs, and watchperson as needed for the execution of the Work as required by the Contract Documents, Laws and

Regulations, for the protection of persons and property, and control of traffic in accordance with applicable manuals for Uniform Traffic Control Devices.

C. Contractor shall coordinate with Engineer and Owner on the use of all barricades, warning lights, and traffic control signage on all public roadways.

D. If required by the Contract Documents or Laws and Regulations, provide and maintain warning lights, barricades, informational signs, and watchmen for the protection of the Work, the protection of persons and property, and control of traffic. From sunset to sunrise, provide each barricade located in public streets or areas of potential pedestrian traffic with at least two operational lights.

E. Barricades shall be painted a color visible at night, and shall consist of, at a minimum, snow fence or a similar material securely anchored to prevent entry of small children or unknowing persons.

F. At a minimum, barricades shall be required at all excavations that have potential to contain standing water, and at all excavations more than 18 inches deep with side slopes on any exposure steeper than 3 units of horizontal run to 1 unit of vertical rise.

G. At a minimum, warning lights shall be required at both ends of all excavations within public streets where the original pavement surface has been removed until a paved surface has been restored to grade.

H. Barricades, warning lights, and traffic control signage within public streets shall, at a minimum, meet the technical requirements of the Institute of Transportation Engineers and the latest edition of the Minnesota Department of Transportation Standard Specifications for Construction.

1.05 TRAFFIC AND PEDESTRIAN SAFETY CONTROL MEASURES

A. In accordance with generally accepted construction practices, Contractor is responsible for job-site conditions and safety procedures and programs, including safety and health of all persons and property, on those portions of the project area affected by or used by Contractor, employees, subcontractors, agents, and others during performance of the work. This requirement will apply continuously and not be limited to normal working hours. Contractor is responsible for the protection of property and the safety and health of its employees, subcontractors, suppliers, agents and others within the project area.

B. Contractor shall be responsible for keeping the site perimeter, crosswalks and trail crossings safe for the public on or adjacent to site for the duration of the work. Contractor shall be responsible for all site safety precautions.

1.06 TRAFFIC PERMITS

A. Contractor shall obtain any permits from federal, state or local agencies necessary for traffic control or road closings necessary for completion of the Work. Contractor shall perform Work in accordance to requirements of all permits.

1.07 TRAFFIC PUBLIC NOTICE

A. Contractor shall be responsible for any public notice regarding work in the right of way, road closings or detours as required by federal, state, or local agencies.

1.08 ACCESS

A. Limit access to each work area as shown on the Drawings unless other arrangements are approved by Owner.

B. All public roadways and private driveways not shown as closed shall remain in service during construction, unless noted otherwise.

C. Inspect and sweep paved surfaces to prevent dirt and mud from being tracked off site.

1.09 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 55 00

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes temporary erosion and sediment control.

B. Section includes Contractor responsibility for compliance with the Minnesota Pollution Control Agency (MPCA) General Stormwater Construction Permit (MNR 100001) and associated Stormwater Pollution Prevention Plan (SWPPP) required for this project.

C. Related Sections

1. Section 01 57 19 Temporary Environmental Controls

2. Section 31 25 00 Erosion and Sedimentation Control

1.02 SUBMITTALS

A. The Contractor shall maintain a record of all SWPPP inspections of the site, and shall include:

1. The project Contract Documents and inspection records shall be available at the construction site in either the field office, or the inspector's vehicle, or the Contractor's vehicle, for inspection by federal, state, and local officials.

2. Weekly/storm event inspection forms with date and time of inspection.

3. Corrective actions taken (including date and time)

4. Documentation of changes to the Temporary Erosion and Sediment Control Plan made during construction.

5. Date of all rainfall events (including total precipitation)

6. Submit all inspection records completed to Owner at the end of the project.

7. All documentation required as part of the Stormwater Pollution Prevention Plan (SWPPP).

1.03 STORM WATER SEDIMENT AND EROSION CONTROL

A. Owner is responsible for obtaining the MPCA General Stormwater Construction Permit (MNR 100001) for authorization to discharge storm water associated with the project construction activity under the National Pollutant Discharge Elimination System (NPDES) program and

providing a copy of the permit to Contractor prior to beginning construction activities at the Site. Contractor will be required to co-sign the MPCA Stormwater Permit Application and is jointly responsible for compliance with Parts II.B, Part II.C, and Part IV of the MPCA Stormwater Construction Permit (MNR 100001), and other Parts if applicable. The MPCA General Stormwater Construction Permit can be found on the MPCA's website at the following link: https://www.pca.state.mn.us/water/construction-stormwater#permit-and-forms-84534d2d

B. Owner is responsible for preparing the Storm Water Pollution Prevention Plan (SWPPP) required under the General Stormwater Construction Permit (MNR 100001) and providing a copy of the SWPPP to Contractor prior to beginning construction activities at the Site.

C. Contractor is responsible for conducting all construction activities in full compliance with the requirements of the MPCA General Stormwater Construction Permit (MNR 100001), the SWPPP and any additional requirements that may be contained in any City, Town or County permits. Owner will provide Contractor with copies of all relevant permits and the SWPPP prior to the start of construction activities.

D. Contractor is responsible for compliance with all requirements specified in paragraph1.03 C until construction is complete, and the construction site has undergone final stabilization. Once Owner is satisfied that these conditions have been met, Owner will prepare and submit the Notice of Termination (NOT) to the MPCA.

1.04 EROSION AND SEDIMENT CONTROL

A. See Specification Section 31 25 00, Erosion and Sedimentation Control.

1.05 WATER MANAGEMENT/CONTROL

A. See Specification Section 01 57 19, Temporary Environmental Controls.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 EROSION AND SEDIMENT CONTROL PRODUCTS

A. See Specification Section 31 25 00 Erosion and Sedimentation Control.

PART 3: EXECUTION

3.01 EROSION AND SEDIMENT CONTROL MEASURES

A. Contractor shall install, routinely inspect and maintain all sediment and erosion control measures for duration of Project in compliance with MPCA General Stormwater Construction Permit (MNR 100001), the associated SWPPP, and as shown on the Drawings.

END OF SECTION 01 57 13

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes temporary environmental controls and clean-up.

B. Related Sections

1. Section 01 35 00 Construction Safety and Security
2. Section 31 23 16 Waste Excavation
3. Section 31 23 19 Dewatering

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 WATER MANAGEMENT AND CONTROL

A. Contractor shall implement all requirements of the project-specific Stormwater Pollution Prevention Plan (SWPPP).

B. Non-Contact Water

1. Definition: water (stormwater, groundwater, or surface water) that does not come in contact with waste material
2. Non-contact stormwater shall be handled in accordance with the SWPPP

C. Contact Water

1. Definition: water (stormwater, groundwater, or surface water) that comes in contact with waste material
2. Contact Stormwater shall be managed in one of the following manners:
   a. Maintained within existing area of waste and allowed to infiltrate within an open excavation
   b. Collected and discharged to sanitary sewer, in accordance with requirements of the MCES permit (to be obtained by Owner)

c. Discharged to the ground or on-site surface water body, in accordance with requirements of MPCA Groundwater Pump-Out General Permit (to be obtained by Contractor)

3. Contact Water shall not be pumped or discharged from the Site without proper controls or in violation of permit conditions.

D. See Section 31 23 19 – Dewatering for additional requirements.

E. Waterways

1. Care shall be taken at all times to prevent uncontrolled discharge to surface water bodies, including the Minnesota River, wetland complexes, ditches, and intermittent streams.

F. Floods

1. Contractor shall maintain flood control berm prior to excavation within the Flood Protection Berm Requirement Boundary, as shown on the Drawings.

2. Contractor shall monitor Minnesota River elevation predictions and plan work such that the site is controlled prior to flood events. Waste materials, whether stockpiled or in an excavation, shall not be exposed to flood waters.

1.04 NOISE CONTROL

A. Conduct operations to minimize noise produced by construction operations and comply with applicable local ordinances.

B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.

C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.

D. Line storage bins and hoppers with material that will deaden sounds.

1.05 DUST CONTROL

A. Contractor shall take special care in providing and maintaining temporary roadways, existing and new roads, haul roads, and public roads used for construction operations in clean, dust-free conditions during construction operations.

B. No visible dust shall be present leaving the construction site.

C. Comply with local environmental regulations and direction of Owner or Owner's On-Site Representative for dust control. If Contractor's dust control measures are considered inadequate, Owner or Owner's On-Site Representative shall have the authority to require Contractor to take additional dust control measures.

D. Contractor shall supply water tank trucks equipped with water cannon capable of delivering water through either front or rear-mounted nozzles. Tank trucks shall be of sufficient size and mobility and carry a sufficient quantity of water to control dust generated by Contractor's activities.

E. Water used for dust control is not available on site and must be obtained and supplied by Contractor.

1.06 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and air from discharge of noxious substances and pollutants produced by construction operations.

B. Have on hand materials and equipment for cleanup of spills or releases and take immediate action to mitigate the effects and prevent further impact to the environment caused by a spill or release.

C. Immediately report spills and releases to local authorities, Owner, Owner's Representative, and any others that require notification.

1.07 CLEANING

A. Clean the working area each day, remove all trash and waste materials, and maintain the Site in a neat and orderly condition throughout the construction period.

B. Remove all garbage, litter, debris, and other materials, attributable to the Work or construction activities, that accumulates in the vicinity of the Site.

C. See Specification Section 01 77 00, Closeout Procedures for additional cleaning information.

1.08 ODOR CONTROL

A. See Specification Section 31 23 16, Waste Excavation for odor control requirements.

1.09 VECTOR CONTROL

A. See Specification Section 31 23 16, Waste Excavation for vector control requirements.

1.10 VOLATILE ORGANIC CONTROL

A. See Specification Section 31 23 16, Waste Excavation for volatile organic control requirements.

1.11 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 CONTACT WATER MINIMIZATION

A. Contractor shall implement measures to minimize the generation of Contact Water

B. Examples of such measures include, but are not limited to, the following: keeping excavations free of water to the extent possible, routing stormwater around or away from excavations, and limiting the amount of waste material that is exposed at any time.

3.02 DUST CONTROL

A. Apply water to roads used by Contractor's equipment to control dust generated by wind or by Contractor's activities.

B. Apply water to ground surfaces within the construction limits to control dust generated by Contractor's activities at the Site.

C. Sweep public roads in vicinity of Site when Contractor's operations create mud and dirt on roads or when dusty conditions develop.

END OF SECTION 01 57 19

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes product requirements.

1.02 SUBMITTALS

A. Submit all manufacturer's instructions for information.

1.03 PRODUCT REQUIREMNTS

A. Material and Equipment incorporated into Work:

1. Conform to applicable specifications and standards.

2. Comply with size, make, type, and quality specified or as specifically approved.

B. Manufactured and Fabricated Materials and Equipment:

1. Design, fabricate, and assemble in accordance with engineering and shop practices standard with industry.

2. Material and equipment shall be suitable for service conditions.

C. Do not use material or equipment for purpose other than for which it is designed or specified.

1.04 MANUFACTURER'S INSTRUCTIONS

A. Installation of materials shall comply with manufacturer's instructions. Obtain and distribute printed copies of such instructions to parties involved in installation, including two copies to Owner's On-Site Representative.

1. Maintain one set of complete instructions at job site during installation until completion of entire Project.

B. Handle, store, install, connect, clean, condition, and adjust materials in accordance with manufacturer's written instructions and in conformance with Specifications.

1. If job conditions or specified requirements conflict with manufacturer's instructions, consult Engineer for further instructions.

2. Do not proceed with Work without written instructions.

1.05 ALTERNATE PRODUCTS

A. See Section 01 33 00, Submittal Procedures for alternate products requirements.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 60 00

SECTION 01 71 13

MOBILIZATION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all supervision, materials, equipment, and labor and performing all operations necessary to:

1. Perform all work that must be performed before beginning Work on the various items described elsewhere in these Specifications.

2. Furnish all insurance/bonding required specifically for this Work.

3. Obtain all licenses, permits, and approvals required for the Work except for those which will be obtained by Engineer or Owner as listed in Section 01 11 00, Summary of Work.

4. Provide project management, perform project coordination, provide updates and attend project conferences and routine weekly meetings.

5. Movement of personnel, equipment, materials, supplies, and incidentals to the Project Site.

6. Establishment of all Contractor's offices and buildings or other facilities necessary to complete the Work.

7. Establish temporary facilities and controls.

8. Establish Site security measures.

9. Locate underground facilities and utilities, including but not limited to, filing a ticket with Gopher State One Call.

1.02 SUBMITTALS

A. Submit copies of all Permits and Notices which are obtained or produced specifically for this Work.

B. Submit Materials Handling Plan and Health and Safety Plan (HASP), for approval prior to beginning any Work at the Site.

C. After Hour Contacts

1. Prior to beginning any Work at the Site, submit to Engineer the names of at least three (3) employees of Contractor who may be contacted after normal working hours in the event of an unanticipated condition requiring immediate attention.

2. At least one person should be available at all times for immediate response to the Site within 2 hours of being called. That person shall have authority to make field decisions for Contractor.

1.03 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 Stage equipment in Owner designated location or as shown on the Drawings.

END OF SECTION 01 71 13

SECTION 01 71 14

DEMOBILIZATION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all supervision, materials, equipment, and labor and performing all operations necessary to demobilize personnel, equipment, supplies, and incidentals from the Work Area.

1.02 SUBMITTALS

A. Submit written certification that all Work has been completed in accordance with the Contract Documents.

1.03 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 SITE VERIFICATION OF CONDITIONS

A. Verify the following with the Engineer and Owner prior to demobilization:

1. Engineer and Owner agree that Final Completion of the Work has been achieved.

2. Written certification by the Contractor that all Work has been completed in accordance with the Contract Documents has been submitted.

3. The Engineer determines and the Owner agrees that the Work is acceptable under the Contract Documents.

4. Document conditions set forth in all applicable Permits and communicate such documentation to the Engineer and the Owner.

3.02 DEMOBILIZATION

A. Demobilization activities must not be initiated until the Owner provides the Contractor with written permission to proceed.

B. Remove all equipment, personnel, structures, supplies, materials, incidentals, temporary survey markers, and utility markers necessary to perform the Work from the Site within 10 business days after receiving written permission to proceed with demobilization.

END OF SECTION 01 71 14

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes procedures for record documents, substantial completion, final completion (final acceptance), and project closeout.

1.02 SUBSTANTIAL COMPLETION

A. The Project shall be considered substantially complete when the Work is available for its intended use and meets the conditions of Substantial Completion as defined within the General Conditions.

1.03 RECORD DOCUMENTS

A. Maintain at the Site (or in Contractor's possession) one set of record documents including all Drawings, Specifications, Change Orders, field test records (if applicable), associated permits, redline record drawings, and documentation of construction activities as required, in good condition and legibly annotated to show changes made during construction. Store record documents separate from documents used for construction and clearly mark them and make accessible to Owner, Owner's On-Site Representative and Engineer at all times.

B. Record information on record documents concurrent with construction progress. Owner, Owner's On-Site Representative and Engineer may require Contractor to improve its performance with regard to recording information during the construction process.

C. Record for each product listed in the Specifications, a description of the actual products installed, including the following:

1. Manufacturer's name and product model number.

2. Product substitutions or alternates used.

3. Changes made by Change Order.

4. Quality control procedures and test results.

D. At a minimum, the following items shall be legibly marked on the record drawings to record actual construction:

1. Approved version of all Shop Drawings.

2. Measured depths or elevations of foundations in relation to a clearly defined, reproducible datum.

3. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements or survey markers.

4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

5. Changes made by Change Order and all minor field changes of dimension and detail.

6. Details not shown on original Drawings.

E. Do not conceal Work until required information is recorded.

F. Submit record documents and all operations and maintenance manuals and other submittals required by other Sections of these Specifications.

G. Maintain at site one record copy of:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change orders and other modifications to the Contract.

5. Field orders, written instructions or clarifications.

6. Approved Submittals.

7. Field test records, including figures showing locations of sampling and chain of custody for any samples shipped off site for laboratory analyses.

8. Associated permits, permit plans, and regulatory approvals.

9. Elevation and thickness verification surveys by qualified land surveyor.

10. Landfill disposal records.

11. Truck weight tickets.

12. Signed construction SWPPP.

13. Modifications made to the SWPPP during the course of the Project.

14. Inspection logs and response action summaries.

15. MPCA construction stormwater coverage card (post in construction trailer).

16. Safety Data Sheets (SDS) of all contractor chemicals used onsite.

1.04 SITE CLEANUP

A. Keep the Site free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, remove all waste materials, rubbish and debris from the premises as well as all tools, construction equipment and machinery, temporary facilities, and surplus materials. Leave the Site clean and ready for occupancy by Owner.

B. Prior to final acceptance, provide final cleaning of the Sites, including, but not limited to the roads, sidewalks, structures and Site improvements, so that the Project will be ready for use by Owner without further cleaning.

C. Debris shall not be buried on site.

1.05 FINAL ACCEPTANCE

A. When Contractor considers that the Work is complete and ready for final acceptance, provide written notice to Engineer.

B. Contractor shall certify by written notice to Engineer that:

1. Contract Documents have been thoroughly reviewed and Work has been inspected by Contractor and complies with the Contract Documents.

2. Work is completed and ready for final acceptance.

C. Upon receipt of such notice, Engineer and Owner will make a final review of the Work with Contractor and will notify Contractor in writing of all particulars in which this review reveals that the Work is incomplete or defective. Contractor shall take such measures as are necessary to remedy such deficiencies.

D. Upon remedy of all such defects and deficiencies noted by Engineer and Owner in part 1.05 C, above, Engineer will issue a recommendation for final acceptance to Owner.

1.06 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, and maintenance materials in quantities specified in each Specification Section, in addition to that required for completion of the Work. Coordinate with Engineer and deliver to facility prior to Final Application for Payment.

1.07 GUARANTIES AND WARRANTIES

A. Contractor shall guarantee all Work and material against all defects as specified in the General Conditions (and Supplementary Conditions), or as otherwise required for specific items in these Specifications. Warranty requirements noted in individual Specification Sections that exceed the minimum correction period prescribed in the General Conditions shall apply for the stipulated time for both material and labor.

B. Standard product warranties are defined as preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to Owner.

C. Special Warranties are defined as written warranties required by, or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for Owner.

D. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

E. Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether Owner has benefited from use of the Work through a portion of its anticipated useful service life.

1. Repair or replace any such defective Work to conform to the provisions of the Contract and without expense to Buyer, within 10 working days after notification in writing by Buyer or Engineer of such defective Work.

2. If the noted repairs are not made by Contractor, or it has not made arrangements for the correction thereof within the period specified above, Owner may do so, and may charge the cost of same to Contractor.

3. Contractor shall perform repair Work so as to cause Owner a minimum of inconvenience and interruption of services.

F. When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

G. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on the Work that incorporates the products.

H. Written warranties made to Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which Owner can enforce such other duties, obligations, rights or remedies. Owner reserves the right to reject warranties and to limit

selections to products with warranties not in conflict with requirements of the Contract Documents.

I. Owner reserves the right to refuse to accept Project Work where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

J. Submit duplicate, notarized copies of written warranties to Engineer prior to the date certified for Substantial Completion in accordance with the requirements of Specification Section 01 33 00, Submittal Procedures. Engineer's certificate of Substantial Completion shall be the commencement date for warranties. When a designated portion of the Work is completed and occupied or used by Owner, by separate agreement with Contractor during the construction period, submit properly executed warranties to Engineer within 15 days of completion of that designated portion of the Work. For items of Work delayed beyond the date of Substantial Completion, provide updated submittal within ten days of acceptance by Owner, listing date of acceptance as start of warranty period.

K. When a special warranty is required to be executed by Contractor, or Contractor and a Subcontractor, Supplier, or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to Owner through Engineer for approval prior to final acceptance.

1. Execute and assemble documents from Subcontractors, Suppliers, and manufacturers.

2. Refer to individual Specification Sections for specific content requirements, and particular requirements for submittal of special warranties.

L. At final acceptance, compile two copies of each required warranty and bond properly executed by Contractor, or by Contractor, Subcontractor, Supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

M. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-inch by 11-inch paper.

1. Identify each binder on the front and the spine with the typed or printed title "Warranties and Bonds," the Project title or name, and the name of Contractor and Subcontractor.

2. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.08 FINAL APPLICATION FOR PAYMENT

A. Final Application for Payment shall be accompanied by a written Final Statement of Account. The Final Statement of Account shall reflect all adjustments to Contract Price including, but not limited to:

1. The original Contract Price.

2. Additions and deductions resulting from:

a. Previous change orders,

b. Allowances,

c. Unit prices,

d. Deductions for uncorrected Work,

e. Deductions for liquidated damages,

f. Deductions for re-inspection payments, or

g. Other adjustments.

3. Total Contract Price, as adjusted.

4. Previous payments.

5. Sum remaining due.

B. Final Application for Payment shall be submitted in accordance with the procedures and accompanied by the other materials described in Specification Section 01 33 00, Submittal Procedures.

C. Contractor shall complete all submittals required by these Contract Documents prior to the payment of Contractor's Final Application for Payment by Owner. Final payment shall not become due and payable until 10 days after all submittals have been made acceptable to Engineer or as provided in the General Conditions, whichever is later.

D. Complete items on the list of items to be completed, and correct items related to deficiencies that become apparent following demonstration, commissioning, or acceptance testing.

E. Submit the required construction records, including record drawings, to Engineer.

F. Contractor and all Subcontractors shall furnish a certificate showing that they have complied with the provisions of M.S.A. 290.92 requiring withholding of income tax on wages at the source. Said certificates shall be executed by the Commissioner of Taxation. IC-134 forms for

certifications may be obtained from the Department of Revenue, Centennial Building, 658 Cedar Street, St. Paul, Minnesota 55155.

G. Seller shall submit Consent of Surety for final payment.

1.09 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 77 00

Division 02

Existing Conditions

SECTION 02 41 00

DEMOLITION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all supervision, labor, equipment, and materials necessary to:

1. Complete any necessary pre-demolition surveys and obtain required permits for demolition of structures and abandonment of utilities

2. Perform any required hazardous material abatement for structures noted on the Drawings.

3. Demolish the structures and systems as noted on the Drawings.

4. Salvage, load, and haul off-site all recyclable materials.

5. Remove concrete and bituminous materials as shown on the Drawings.

6. Load, transport, and dispose off-site all other demolition materials, debris, and rubble.

7. Remove underground utility pipes, manholes, and catch basins as shown on the Drawings.

8. Seal select existing monitoring wells by a state licensed well driller.

9. Protect items adjacent to the Work that are to remain in place.

B. Related Sections

1. Section 01 35 00 Construction Safety and Security

2. Section 31 01 00 Site Preparation

3. Section 31 10 00 Clearing and Grubbing

4. Section 32 10 00 Bases and Pavements

5. Section 32 31 00 Fences and Gates

6. Section 33 10 00 Water Utilities

7. Section 33 30 00 Sanitary Sewer Utilities

8. Section 33 40 00 Stormwater Utilities

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. American National Standards Institute (ANSI)

a. ANSI A10.6 – Safety and Health Requirements for Demolition Operations.

2. Code of Federal Regulations (CFR) 40 CFR 61 subpart M, asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)

3. Minnesota Rules Chapter 4725, Wells and Borings

4. Dakota County Ordinance No. 114

a. Section 11 – Well Sealing

5. Minnesota Pollution Control Agency's Pre-Demolition Environmental Checklist and Guide (http://www.pca.state.mn.us/publications/w-sw4-20.pdf)

6. Occupational Safety and Health Administration (OSHA) Construction Industry Regulations (29CFR)

1.03 SUBMITTALS

A. Demolition plan including:

1. Sequence, methods to be employed, and equipment required;

2. Disposal sites and proposed haul routes;

3. Requirements for temporary signs, barriers, and walkways; and

4. Indication that safety measures will be in accordance with applicable codes.

B. Record drawings showing:

1. The location and elevation of all utilities that have been abandoned in place, and

2. Any necessary revisions to the contract documents discovered during demolition.

C. Demolition Debris Disposal Documentation: Contractor shall submit legible copies of all load tickets or receipts, or other acceptable evidence, documenting the weight and acceptance of demolition debris that are taken to each off-site disposal or recycling facility.

D. Hazardous Materials Disposal Documentation: Contractor shall submit documentation of actual disposal of abated hazardous materials, including ACM, at a designated landfill. Documentation including manifests, weight tickets and disposal receipts shall be submitted by the Contractor.

E. All necessary documentation to perform well sealing in compliance with state and local regulations.

1.04 DEFINITIONS

A. *Demolish* – is to completely remove a specified pipe, fitting, housing, feature, or structure without regard for the conditions of the item after being removed.

B. *Salvage* – is to remove an item in a condition that allows its reuse for a similar purpose.

C. *Abandon* – is to leave in place with appropriate measures taken to prevent disturbance of the surrounding Work.

D. *Protect* – is to take necessary precautions to leave an item unharmed by the Work.

E. *Reuse* – is to allow specific suitable items be reused in the Work after salvage.

1.05 JOB CONDITIONS

A. Contractor shall be solely responsible for evaluating existing facilities and Site conditions and considering all factors that may affect the progress or performance of the Work. No consideration to extra fees or extended schedule will be considered as a result of Work or materials required that were available for review prior to receipt of bids.

B. Contractor shall become the owner of materials generated by the demolition efforts and shall dispose or recycle all of the demolition debris in accordance with all applicable laws and regulations.

C. In the event that asbestos containing material (ACM), underground storage tanks or containers, or other hazardous materials are encountered during demolition activities, Contractor shall immediately stop work in that area and notify Engineer and establish a hazardous materials abatement and demolition plan.

D. Deterioration. Contractor shall perform inspections of all materials and structures to be removed prior to rigging, cutting, or other demolition activities to assess the existing conditions. Inspection and demolition planning/methods shall consider the deterioration of materials and structures due to corrosion, wear, tear, damage, weathering, and lack of maintenance.

1.06 SEQUENCING AND SCHEDULING

A. Coordinate demolition activities with Owner to provide adequate site access for Work.

B. Coordinate demolition activities to avoid damaging any portion of the Work.

C. Take precautions to ensure that structural elements are not overloaded at any point during the demolition and construction Work.

1.07 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 MATERIALS

A. Provide marking materials suitable for duration of service required.

B. Provide well sealing materials suitable for well conditions, in accordance with state and local regulations.

PART 3: EXECUTION

3.01 GENERAL

A. Site Verification of Conditions

1. Inspect existing conditions and note dimensions, clearances, access, utilities and protections required.

2. Mark the limits of the civil, architectural, structural, process piping, mechanical, and electrical demolition. Mark any hazardous materials requiring abatement.

3. Note items to be salvaged for reuse in the Work.

4. Note items to be salvaged and returned to Owner.

5. Provide required protective measures before beginning demolition.

B. Protection

1. Perform demolition in such a manner as to:

a. Eliminate hazards to persons and property,

b. Minimize interferences with adjacent spaces, and

c. Minimize interruption of existing utilities.

2. Provide safeguards per ANSI A10.6, including warning signs, warning lights, barricades, temporary fences, chutes, and nets as required for protection of personnel, adjacent structures, utilities to remain, and new Work during demolition Work.

3. Provide dust control as required to avoid hazardous or nuisance conditions in the surrounding area.

4. Do not use water for dust control if it results in hazardous conditions such as ice, flooding, or pollution.

5. Protect monitoring wells that are not identified for sealing. If damaged, Contractor to replace at own expense.

C. Explosives will not be permitted.

D. Demolish and remove existing construction only to the extent required by new construction and as indicated on the Drawings.

E. If unforeseen conditions are encountered, or if additional hazardous materials are suspected, obtain instruction from Engineer before proceeding with demolition.

F. In the event of demolition of items not scheduled to be demolished, promptly replace to the approval of Engineer at no additional cost to Owner.

G. Salvage

1. Salvage existing items as indicated on the Drawings.

2. Disconnect, remove, protect, and store salvaged items in a manner that will prevent damage.

3. Reinstall salvaged items to be reused.

4. Deliver salvaged items not reused in the work to Owner.

H. Demolition debris including furniture, fixtures, brick, concrete, stones, metals, plastic, mechanical equipment, electrical equipment, vegetation, and earth not intended for reuse in the Work shall become the property of Contractor.

3.02 PAVEMENT

A. Saw cut to a full depth, all extents of bituminous pavement to be removed.

3.03 BELOW GRADE UTILITY DEMOLITION/ABANDONMENT

A. Field verify utilities shown on the Drawings.

B. Protect utilities that will not be abandoned or removed.

C. Remove or abandon utilities as shown on Drawings.

D. Buried pipes to be abandoned:

1. 6-inch or less: securely cap pipe.

2. 8-inch or greater: fill with grout or flowable fill and cap.

E. Coordinate the removal of non-Owner utilities with the appropriate utility owner.

F. Maintain a record drawing of the location of utilities that have been abandoned in place.

3.04 STRUCTURAL DEMOLITION

A. Demolish structures as indicated on the Drawings.

B. Saw cut to a full depth, all extents of concrete slabs and structural members to be removed.

3.05 MECHANICAL/ELECTRICAL SYSTEMS

A. Demolish mechanical and electrical systems as indicated on the Drawings.

3.06 HAULING AND TRANSPORTATION OF DEMOLITION DEBRIS

A. Contractor shall be responsible for and shall complete all the work necessary to ensure that material removed from the Site will be accepted by the disposal or recycling facility(s).

B. Contractor shall arrange for and provide transportation of demolition debris to off-site disposal or recycling facilities.

C. Contractor shall provide all equipment, materials, and labor to load all vehicles planned for transportation of demolition debris.

D. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Federal, state, and local laws and regulations regarding hauling and disposal shall apply. If wet loads have the potential to shed water, then side-dumps or gasketed end dumps shall be utilized.

E. Contractor shall prepare all forms necessary for waste profiling, acceptance, transportation, and disposal.

F. Materials removed from the Site shall be transported directly to the recycling and/or disposal facility. The Contractor shall not change either route or mode of transport after commencing offsite transportation without Company's written approval.

G. All transport vehicles shall be visually clean of soil, dust or other materials prior to vehicle departure from the Site.

H. Contractor is responsible for arranging weighing of transport vehicles for travel on public roadways.

I. Contractor shall maintain strict compliance with all federal, state and local laws, regulations, or requirements when transporting hazardous and non-hazardous soil or other materials from the Site to recycling and/or disposal facilities.

J. Any spill caused by Contractor's handling of any material shall be cleaned up at the Contractor's sole expense. All spills shall adhere to the Site's and Company's spill reporting plan.

3.07 DEMOLITION DEBRIS (NON-HAZARDOUS) DISPOSAL

A. Burning of materials will not be permitted on the site.

B. At least weekly, remove demolition debris to maintain suitable site access.

C. Transport and dispose of demolition debris at a suitable location off-site in compliance with applicable regulations.

D. On completion of demolition and after removal of all debris, leave site in a clean condition satisfactory to Engineer.

3.08 WELL SEALING

A. Contractor shall be responsible for the proper sealing of the well in compliance with state and local regulations.

B. Well sealing shall be completed by a licensed well driller with current registration in Minnesota.

C. Only the wells designated for abandonment on the Drawings, or other wells as designated by the Owner, shall be sealed and abandoned. All other wells shall be protected.

D. Contractor is responsible for all permits and fees.

E. Contractor shall submit all regulatory submittals, including sealing records, to Owner within 30 days of sealing. Contractor shall also file records with state and local jurisdictions.

END OF SECTION 02 41 00

Division 26

Electrical

SECTION 26 00 00

ELECTRICAL GENERAL PROVISIONS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes general provisions relating to the electrical and related work.

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 SCOPE

A. Contractor shall also refer to the other divisions of the plans and specifications for information which pertains to the electrical section.

B. The work included in the project shall include the furnishing of all required labor and materials for a complete and operable electrical system as indicated on the accompanying drawings and as required by the project manual inclusive of all appurtenances not specifically shown or covered by the specifications but required for complete operation of the electrical system as defined in the documents. The work shall also include the testing, adjustment, start up and troubleshooting of the electrical equipment and the training of Owner's operating personnel in its operation and maintenance.

C. It shall be the responsibility of Contractor to furnish a complete and fully operating system. Contractor shall be responsible for all details which may be necessary to properly install, adjust and place in operation the complete installation. Contractor shall assume full responsibility for additional costs which may result from unauthorized deviations from the contract documents.

1.04 VERIFICATION OF DRAWINGS

A. The contract drawings indicate the required size of conduit and cable for wiring. The locations of equipment shall be verified in the field by Contractor. In the event it should become necessary to change the location of any work due to interference with other work, consult with Engineer before making any changes. Contractor shall determine and be responsible for the proper location and character of all anchor bolts, inserts, hangers, sleeves, etc. for the electrical equipment, unless specifically detailed otherwise.

1.05 ALTERNATES, SUBSTITUTIONS

A. See General and Supplemental Conditions and Division 1.

1.06 QUALITY

A. All work shall be installed by skilled mechanics in a neat and workmanlike manner and shall be approved by Engineer before final acceptance by Owner.

B. If equipment is furnished having power and control requirements other than as specified, Contractor shall make all necessary changes and furnish a complete set of drawings for installing the alternate equipment. The installation shall comply with the requirements of the latest edition of the National Electrical Code, local and state codes and ordinances. Where the contract documents call for workmanship or materials in excess of code requirements, the project manual shall take precedence. Electrical equipment and materials shall be Underwriter's Laboratory approved, where U.L. standards for such products exist.

C. All equipment to be installed on the project shall be new and unused. Existing equipment, if applicable, shall be reused only after obtaining written permission from Engineer.

1.07 GUARANTEE

A. See General and Supplemental Conditions and Division 1.

1.08 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 GENERAL

A. The following items shall be included in the work to be done:

1. All work shall be under the direct supervision of a master electrician.

2. Furnish permits as required for electrical construction. Pay all electrical inspection charges for the construction.

3. Furnish and install all power and control conduit and cable.

4. Furnish and install the ground system and complete all grounding connections.

5. Furnish and install electrical equipment as specified in accordance with the manufacturer's recommendations, instructions and directions. All equipment shall be properly protected during construction.

6. Complete all connections and test-operate the equipment in cooperation with Owner, Engineer and others working on the project.

7. Provide temporary wiring for construction use including ground fault protection in accordance with the latest edition of the National Electrical Code.

3.02 INSPECTION

A. Contractor shall inspect all the electrical equipment and shall notify Engineer in writing before the equipment is installed if the equipment appears to be deficient in fit, form or function.

3.03 CONSTRUCTION

A. Contractor, under this portion of the contract, shall be responsible for all cutting, patching, excavation, backfill, sleeves, chases, openings, etc. for equipment specified in this portion of the contract documents or for cable and conduit and associated electrical equipment that is specified in this portion of the contract documents to serve equipment that is provided by a different portion of these documents. If Contractor provides equipment that has power and control requirements that are different from those specified, then that Contractor shall be responsible for any additional costs incurred for engineering, construction, and all wiring changes required to make the alternate equipment perform per the intent of the contract documents.

B. All patching, cutting, etc. shall have a finish that is compatible with the final finish of the remainder of the surface and shall meet with the approval of Engineer.

END OF SECTION 26 00 00

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment and labor to construct a complete wiring system including conductors, cable, conduit, boxes, fittings, devices and related equipment.

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. National Electrical Manufacturer's Association (NEMA)

a. NEMA 250 - Enclosures for Electrical Equipment

b. NEMA WD1 - Wiring Devices

2. National Fire Protection Association (NFPA):

a. NFPA 70 - National Electrical Code (NEC), latest edition

3. Underwriter's Laboratories (UL)

a. UL5 - Surface Metal Raceways and Fittings

b. UL50 - Cabinets and Boxes

c. UL83 - Thermoplastic Insulated Wire

d. UL360 - Liquid-Tight Flexible Steel Conduit

e. UL514 - Outlet Boxes and Fittings

1.03 SUBMITTALS

A. Conductors (all kinds)

B. Signal cable

C. Conduit, boxes and fittings (all kinds)

D. Devices

E. Wire identification

1.04 QUALITY ASSURANCE

A. All material shall meet the requirements of the National Electrical Code (N.E.C.), National Electrical Manufacturers Association (NEMA) specifications and local codes and ordinances, and shall be Underwriter's Laboratories listed, where U.L. standards for such products exist.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 CONDUCTORS COPPER - 600V

A. Conductors shall be of soft drawn, annealed copper, having a conductivity of not less than 98% of pure copper. Conductors shall be NEMA Class B stranded. The conductors shall conform to ICEA and NEMA standards.

B. The minimum size for power wiring shall be #12 AWG copper, unless shown otherwise. All conductor sizes are based on copper with THWN insulation rated at not less than 75 deg C and suitable for wet and dry locations unless noted otherwise.

C. All circuits shall be installed using wire with 600V insulation, unless wire with a different voltage rating is indicated. The insulation, as a minimum, shall have a conductor rating of not less than 75 deg C in both wet and dry locations. All cable shall have the same type of insulation by the same manufacturer throughout the project. Insulation shall meet all applicable NEMA and ICEA standards.

D. All conductors shall be stranded.

2.02 SIGNAL CABLE

A. Signal cable shall meet the following requirements: The conductors shall be not less than 16 gauge, 7 strand min., Class B, tin coated concentric bare copper wire with a 15 mil (nominal) 90 deg. C PVC primary insulation. The conductors shall be shielded with .35x5 mil (min.) 100% coverage aluminum or copper mylar tape shield, or equal, and an 18 gauge strand copper wire drain wire. The outer jacket shall be 20 mils (nominal) 75 deg. C PVC suitable for wet or dry locations.

2.03 WIRE IDENTIFICATION

A. Each power, control and signal conductor shall be identified by plastic tags permanently attached to the cable. The tags shall be attached to each cable at each termination and wherever the cable is accessible in junction or pull boxes. Tags shall be marked with printing showing:

1. The circuit number from the cable and conduit schedules and:

2. The terminal number as assigned by the equipment manufacturer.

B. The cable marking system shall use transparent tape with a white area where the numbering shall be typed using a typewriter, as manufactured by:

1. Raychem

2. Thomas & Betts

3. Brady

2.04 CONDUITS, FITTINGS, BOXES AND DEVICES

A. Contractor shall supply conduit, couplings, connectors, junction boxes, fittings and all other required items for a complete raceway system. The conduit fills indicated in the contract documents are based on copper conductors with THWN insulation suitable for 75 deg C insulation in both wet and dry locations. Contractor shall resize conduits for other conductor and/or insulation systems, if approved. The conduit shall be reamed and cleaned and made free of burrs. Exposed conduit runs shall be straight and true with the building lines and elbows, bends and offsets shall be uniform and symmetrical. All conduit runs shall be installed with adequate means for drainage provided at the low points.

B. Rigid Steel Conduit:

1. All conduit shall be galvanized rigid steel unless specifically noted otherwise.

2. The conduit used shall be hot dipped galvanized, including the threads. Unless specified otherwise the conduit shall not be smaller than 3/4". The conduit shall bear the U.L. label.

3. Job site threading need not be galvanized. However, job site threading shall be painted with oil base primer to prevent oxidation of the threads.

4. The use of threadless connectors with rigid steel conduits is not acceptable.

5. Intermediate metal conduit shall not be acceptable.

6. All supporting hardware, clamps, anchors, etc. shall be Type 316 stainless steel.

C. PVC Conduit:

1. Unless otherwise indicated on the Drawings, Contractor shall furnish and install Schedule 80 PVC conduit underground or embedded in concrete. The conduit shall be supported as recommended by the manufacturer or as required by applicable codes and ordinances, whichever is the more stringent. The conduit shall be composed of high impact PVC and shall be rated for 90 deg C wire. The conduit shall be listed for underground, encased, and exposed applications. The PVC conduit system shall contain fittings for connecting the system to junction boxes and other devices as required.

2. Wherever a PVC conduit system is used Contractor shall furnish and install copper ground conductors. The conductors shall be continuous with no splices or joints unless permitted by the National Electrical Code. The size of the ground conductor shall be as required by the National Electrical Code or as shown on the drawings, whichever is more stringent.

3. The duct shall bear the U.L. label.

4. The conduit shall not be smaller than 3/4".

5. Underground conduit banks shall use Schedule 80 PVC for certain power and control circuits. See Part 3.

6. PVC conduit is permitted only where specifically shown. All other areas must be wired utilizing rigid steel or as required by the contract documents.

7. All supporting hardware, clamps, anchors, etc., shall be PVC or Type 316 stainless steel.

D. Continuous Polyethylene (PE) Duct:

1. Continuous high-density polyethylene (HDPE) duct may be used in place of Schedule 80 PVC underground duct where conduits are to be installed using directional boring method. See Part 3 of this Section.

2. PE duct shall have Schedule 80 (nominal) wall thickness, and shall bear U.L. label for use as underground electrical duct.

E. Electrical Metallic Tubing:

1. Electrical Metallic Tubing (EMT) shall be galvanized and bear the UL label. EMT shall be used only indoors in the electrical building and the storage building, no exceptions.

F. Flexible Sections:

1. Unless equipment is factory wired, the conduit system shall be joined to the equipment with waterproof flexible metallic conduit. The conduit shall be cold rolled steel, galvanized strip shall meet the requirements of a one minute Preece dip test. The galvanized flexible conduit shall be covered with 40 mils ±5 PVC coating. The tensile strength of the PVC shall exceed 1600 psi. The flexible conduit shall be connected to the equipment and

conduit system with waterproof, oil proof and dustproof connectors which are designed for use with the flexible conduit installed. All flexible conduit and fittings shall be U.L. approved. The minimum and maximum lengths of flexible connectors shall be sixteen (16) and thirty (30) inches respectively. The flexible conduit shall not be used for grounding equipment. A separate conductor in accordance with N.E.C. Section 250 shall be installed inside the flexible section.

G. Boxes Cast:

1. Outlet and junction boxes shall be of the weatherproof, galvanized cast, ferrous alloy type with threaded hubs for use with rigid steel conduit. The boxes shall bear the U.L. label.

2. In areas where aluminum rigid metal conduit is used, the boxes shall be copper-free aluminum.

3. Manufacturer/Style:

   a. Crouse-Hinds Type FS

   b. Appleton Type FS

   c. Or equal.

H. Wiring Devices Specification Grade:

1. Wiring devices shall be AC quiet, NEMA specification grade, heavy duty unless otherwise specified. All devices shall meet Federal Specification W G 596E and W S 896E NEMA standard WD 1 4, and shall be listed by the Underwriter's Laboratories. The voltage rating shall be as required for the application. The devices shall have an ampacity of not less than 20 amps.

2. Toggle switches shall be 2-pole, to enable interlocking of mechanical equipment as indicated on Drawings.

3. Wall plates shall be Type 316 stainless steel. All switches, other than lighting switches, shall have an engraved label identifying the function of the switch and switch positions.

4. Where applicable, devices located in hazardous areas or areas where adverse conditions exist, shall meet NEMA and National Electrical Code requirements for those areas.

I. Switch Labels

1. All switches, other than lighting switches, shall have an engraved label identifying the function of the switch and switch positions. Labels shall be Type 316 stainless steel, or engraved laminated plastic, attached with screws.

PART 3: EXECUTION

3.01 UNDERGROUND WORK

A. Contractor shall be responsible for all excavating, concrete work where applicable, and backfilling. The underground conduit shall be at least 30 inches below the finished grade.

B. Backfill shall be earth or sand tamped into place. The trench shall be filled to the top and the surface restored to a finished condition. All excess earth shall be removed.

3.02 UNDERGROUND CONDUIT BANK

A. Where shown, Contractor shall furnish and install underground conduit bank. The top of the finished conduit bank shall not be less than thirty (30) inches below the finished grade. The trench shall be dug to the required depth without pockets or dips. All stones shall be removed from the bottom of the trench. Trenching and conduit bank foundation shall be compacted sand per Divisions 31 thru 33 requirements.

B. The following conduit types shall be used in conduit banks:

1. Galvanized Rigid Steel:

a. Shielded signal circuits

b. Motor feeders powered by variable frequency drives (VFDs)

c. Telephone/LAN circuits

2. Schedule 80 PVC Conduit:

a. All other power and control circuits

C. Furnish and install vinyl cable warning tapes to identify the outer edges of conduit banks as detailed on Drawings. Tape shall be red or yellow, with the words “Caution – Buried Electric Lines Below” or similar language. Tape shall be six inches (6") wide.

3.03 INSTALLATION

A. Contractor shall furnish, install, wire and start up equipment as required by the contract documents. The manufacturer's installation recommendations shall be observed and the completed assembly shall meet applicable code requirements.

3.04 HAZARDOUS AREAS

A. Where applicable, devices and conduit installation in hazardous areas or areas where adverse conditions exist, shall meet NEMA and NFPA (including NEC) requirements for those areas. This includes, but is not limited to, the use of seal-off fittings to isolate hazardous areas as required.

3.05 CONDUCTOR INSTALLATION

A. Conductors shall be installed using industry accepted techniques as defined by Underwriter's Laboratories, National Electrical Code, NEMA, ICEA, and other applicable standards. Contractor shall use approved pulling compound where applicable.

B. No splices shall be made in power wiring except in junction boxes. Conductors shall be continuous from outlet to outlet.

C. No splices shall be made in signal or control conductors. The wiring shall be continuous from device to device.

D. All wire and cable shall be tested for grounds and continuity before the circuit is energized. Contractor shall assume full responsibility for damage done to the equipment due to circuit grounds or open circuits.

3.06 MOTOR CONNECTIONS

A. Where the wiring system connects to the motor leads in motor junction boxes, the connections shall be insulated with Raychem Type MCK, or equal, motor connection insulation kits.

3.07 CABLE SPLICES

A. Power cables or control circuit cables that are spliced in locations that are subject to damp or wet locations shall be spliced using 3M cast splice kits, or equal.

END OF SECTION 26 05 00

SECTION 26 20 00

LOW VOLTAGE ELECTRCIAL TRANSMISSION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor for construction of switchgear, panelboards and transformers.

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

B. National Electrical Manufacturer's Association (NEMA)

1. NEMA 250 - Enclosures for Electrical Equipment

2. NEMA PB 1 - Panelboards

3. NEMA ST-20 - Dry-Type Transformers for General Applications

C. National Fire Protection Associates (NFPA)

1. NFPA 70 - National Electrical Code (NEC), latest edition

D. Underwriter's Laboratories (UL)

1. UL 67 - Panelboards

2. UL 50 - Cabinets and Boxes

3. UL 1561 - Dry-Type General Purpose and Power Transformers

1.03 MAIN SERVICE

A. Contractor shall coordinate the installation of the new main service. The system voltage and ampacity shall be as shown. It shall be the responsibility of Contractor to contact the utility serving the project sites and coordinate the details of the service entrances.

B. Responsibilities of the Utility and Contractor are as follows:

1. Utility will:

a. Furnish current transformers for revenue metering.

b. Furnish and install primary conductors and primary terminations.

2. Contractor shall:

a. Furnish and install conduit, enclosures and provisions for utility metering equipment.

b. Construct service, transformer pad and related conduits as indicated on Drawings. Service shall be constructed in accordance with Utility Company requirements and as indicated on Drawings.

c. Furnish and install secondary conduits and cables.

C. The local electrical utility is:

Xcel Energy

1.04 SUBMITTALS

A. Shop drawings and technical data including:

1. Panelboards (include schedule of circuit breakers).

2. Transformers.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 PANELBOARDS

A. Unless shown otherwise, the bussing shall be suitable for 200 amps, minimum. The number of circuits shall be not less than indicated on the schedules shown on the drawings. Unless shown otherwise, panelboards shall be NEMA 1. All panelboards on the project shall be by the same manufacturer, shall bear the U.L. label and listed as "suitable for use as service equipment" where applicable.

B. Cabinet rough in boxes shall be code gauge steel, zinc galvanized, on both inside and outside surfaces, with an in-turned flange on all sides of the front. The front covers shall be sheet steel, with a rust inhibitor primer and a baked enamel finish for surface mounted panels. The front covers shall be fitted with a door with a continuous butt type hinge concealed and welded to

the back of the door. The other three sides shall have door stops. Doors over 48 inches high shall have auxiliary fasteners at the top and bottom. The doors shall have locks with two keys per lock. When the front cover and door assembly is removed, access to the wiring gutters shall be provided. The sub plate shall be fastened to the panel board with screws. The entire panelboard shall be of dead front construction. The trim shall be adjustable.

C. Where no main overcurrent protective device is scheduled, Contractor shall provide panelboards with main lugs only. Panelboard bussing shall be braced at equal to the interrupting rating of the largest branch overcurrent device in panelboards with main lugs only. The panelboard neutral shall have solderless connectors numbered not less than the number of branch circuits and available spaces in the panelboard. All spaces shall be connected to alternate phases.

D. Unless otherwise shown, main and branch circuit breakers rated at 208 or 240 volts shall have an interrupting rating of not less than 14,000 amps, r.m.s., sym. Unless otherwise shown, main and branch circuit breakers rated at 480 volts shall have an interrupting rating of not less than 30,000 amps. r.m.s., sym. Where panelboards and breakers are UL labeled for the application, series rated main and branch breakers may be used. Circuit breakers shall indicate open, closed, or trip conditions by handle position. Circuit breakers shall be quick make, quick break with thermal magnetic trips having long time and instantaneous tripping characteristics. Multi pole breakers shall have one handle with internal trip bar with the circuit breaker cases fastened together. Panelboards with breakers with an interrupting rating of 14,000 amps or less, may be plug in. Other panelboards are to be of bolt on circuit breaker construction.

E. Where required the panelboards shall contain ground fault interrupting circuit breakers. The breakers shall have an interrupting rating of not less than 10,000 amps, r.m.s., sym. The breakers shall have a sensing circuit capable of tripping the breaker in not more than 30 milliseconds at a current imbalance of 5 mA. The breaker shall contain a sensing circuit test feature.

F. Install closure plates in each space not occupied by a breaker where the knockout has been removed. Accurately list the circuit numbers on the panelboard schedule utilizing a typewriter.

2.02 SURGE PROTECTIVE DEVICE (SPD)

~~F.~~ Provide SPD which meets UL 1449, latest edition, utilizing thermally protected metal oxide varistor (MOV) as the core technology. SPD shall provide protection between each of 5 modes (4-wire plus ground) with minimum surge current capacity of 160 kA. Dual color LED indicating lights shall be utilized to indicate protection status.

A.

~~2.02~~2.03 DISTRIBUTION TRANSFORMERS

A. Transformers shall be dry type suitable for indoor or outdoor service as shown on the drawings. Transformers shall have a basic impulse level of not less than 10 kV. Transformers shall have not less than one 2.5% full capacity above normal primary voltage and two 2.5% full capacity below normal primary voltage taps. Sound level may not exceed 45 dB determined in accordance with procedures outlined with NEMA and ANSI standards. The transformers shall have a kVA rating

as shown on the drawings. The transformers shall have insulation suitable for NEMA Class H, 150 deg C. The transformer, at full load, shall have a temperature rise not exceeding 115 deg C over a 40 deg C ambient. The transformers shall be U.L labeled for 115 deg C operation.

B. Transformers shall be constructed in accordance with NEMA and ANSI standards. The transformers shall be finished with one coat of rust inhibiting primer and two finish coats of paint.

C. Transformers shall comply with U.S. Department of Energy latest efficiency requirements.

~~2.03~~2.04 UTILITY METER SOCKET

A. Provide utility meter socket as approved by the serving utility.

~~2.04~~2.05 SAFETY SWITCHES

A. Safety switches shall be heavy-duty, load break, fusible if so indicated, NEMA 3R for outdoor locations, conforming to UL 98 and NEMA KS1. Fuses shall be UL "Class R" fuses, sized as indicated on the Drawings.

B. Square D Class 3110 or approved equal.

~~2.05~~2.06 GROUNDING MATERIALS

A. The entire installation shall be grounded in accordance with the National Electrical Code and as otherwise detailed.

PART 3: EXECUTION

3.01 PANELBOARDS

A. Panelboards shall be mounted with the top of the panelboard at 72 inches above finish floor.

END OF SECTION 26 20 00

Division 31

Earthwork

SECTION 31 01 00

SITE PREPARATION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to prepare the Site for construction, including, but not limited to:

1. Removal of all trash, debris, rocks, and foreign materials necessary to access the work area and perform the work.

2. Removal, salvage and replacement of any traffic signs within the Work areas.

3. Relocation or protection of all existing utilities and coordination with utility companies relocating any electrical, gas or communications lines.

4. Coordination with utilities companies for all removals, relocations, or replacements of existing utilities.

5. Coordination with other contractors working within or near project areas.

B. RELATED SECTIONS

1. Section 31 10 00 Clearing and Grubbing

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 SEQUENCING AND SCHEDULING

A. Protect trees along the site perimeter within the work area as long as practicable to provide a visual barrier for the site. Coordinate tree removal sequencing with Owner and Engineer.

B. No trees shall be removed without approval of Owner and Engineer.

1.04 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 GENERAL

A. Take necessary measures to prepare the Site access and Site conditions necessary to perform the Work, all in accordance with the Drawings and these Specifications.

B. Take necessary measures to secure the Project Site from public access to protect Contractor's materials and equipment, and Project Work areas.

C. Take necessary measures to protect Work areas from public access that may pose danger or hazard to the public.

3.02 UTILITY LOCATIONS

A. Locate all utilities and resolve any utility conflicts with utility company prior to any excavation work. Coordination between Contractor and utility companies shall be incidental to the Work.

3.03 CLEARING AND GRUBBING

A. See Section 31 10 00, Clearing and Grubbing for clearing and grubbing requirements.

END OF SECTION 31 01 00

SECTION 31 05 19.13

GEOTEXTILES FOR EARTHWORK

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to furnish and install geotextiles including, but not limited to:

1. Riprap Underlayment

2. Road Surfacing and Pavement Underlayment

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. American Society for Testing Materials (ASTM)

a. ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc-Type Apparatus

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Submit for record manufacturer's quality control certificates indicating conformance test results of furnished material to the Specifications.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Roll Identification:

1. Provide geotextile in rolls protected by impermeable and opaque covers and tagged with the following information:

a. Manufacturer's name, address, and telephone number.

b. Product identification.

c. Lot number.

d. Roll number.

e. Roll dimensions.

2. Provide instructions on special handling during hauling and storage.

3. Handle and protect product to ensure product is not damaged.

B. Material will not be accepted on-site without Quality Control Certificates.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Furnish materials whose minimum roll values meet or exceed those specified.

B. Unless specifically authorized, do not furnish special run or value added products.

C. Material shall retain a minimum 70 percent strength after 500 hours direct exposure to sunlight (Ultra Violet Resistance ASTM D4355).

2.02 RIPRAP UNDERLAYMENT

A. Riprap underlayment to meet the requirements of Mn/DOT Standard Specification 3733 Type 4 geotextile fabric.

2.03 ROAD SURFACING AND PAVEMENT UNDERLAYMENT

A. Road surfacing and pavement underlayment to meet the requirements of Mn/DOT Standard Specification 3733 Type 5 geotextile fabric.

PART 3: EXECUTION

3.01 EXAMINATION

A. Examine and verify acceptability of surface to receive installation of geotextile.

3.02 INSTALLATION

A. General

1. Roll out in a manner to keep material in constant tension.

2. Weight material with sandbags or approved equivalent during installation to prevent movement and wind disruption. Keep weight in place until cover material is applied.

3. Prevent damage to underlying material during installation.

4. During installation, do not entrap stones, soil, dust, or moisture which would damage underlying material, hamper seaming, or impede performance of the product.

5. Do not expose material to precipitation prior to installation.

6. Do not expose material to direct sunlight for more than 300 hours prior to installation.

B. Seams

1. Slopes steeper than 10 horizontal to 1 vertical:

a. Seam by sewing, fusion, or other approved methods.

b. Seam shall be continuous.

c. Seam vertical on slope, not across slope.

d. Thread shall be polymeric with properties equal to or exceeding the geotextile.

e. Sew seams using J-type or double-fold type double-lock stitch, seam stitches ½ to ¾-inch apart and no closer than one inch from edges.

2. Slopes flatter than 10 horizontal to 1 vertical:

a. Overlap shall be a minimum of 18 inches.

b. Spot seam may be used to prevent wind uplift in-place of sandbags where appropriate.

c. Orient overlap in direction of filling (cover material).

C. Install geotextile around protruding appurtenances as shown on the Drawings (if applicable).

3.03 REPAIR

A. Remove debris, soil, or other material which may have penetrated the geotextile.

B. Slope Areas

1. Sew seams using J-type or double-fold type double-lock stitch, seam stitches ½ to ¾-inch apart and no closer than one inch from edges.

2. For tears exceeding 10 percent of roll width, remove roll from slope and replace.

C. Non Slope Areas

1. Spot seam fabric patch in place with a minimum 24-inch overlap in each direction.

END OF SECTION 31 05 19.13

SECTION 31 10 00

CLEARING AND GRUBBING

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete site clearing and grubbing, including, but not limited to:

1. Clearing and grubbing that includes: cutting and/or removing all trees, shrubs, and herbaceous plants (including stumps) as shown on Drawings.

2. Protecting all remaining trees and vegetative materials located within and adjacent to the construction limits and as directed by Engineer.

3. Proper composting and/or disposal of vegetative materials cleared and grubbed from the site in accordance with Laws and Regulations.

4. Topsoil stripping.

1.02 SUBMITTALS

A. No submittals are required from this Section.

1.03 SEQUENCING AND SCHEDULING

A. Coordinate sequencing and scheduling of Work on the site with Owner and Engineer.

1.04 BASIS FOR COMPENSATION

Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 CLEARING AND GRUBBING

A. Clear and grub areas indicated on Drawings or as directed by Owner.

B. Remove stumps, roots, and buried logs.

C. Protect trees not marked to be removed.

D. Composting and/or chipping of cleared vegetation are incidental to the Work.

3.02 TOPSOIL

A. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other objectionable material; remove heavy growths of grass from areas before stripping.

B. Stockpile topsoil in storage piles for use during site restoration in areas shown on the Drawings or approved by Owner and Engineer. Construct storage piles to provide free drainage of surface water and provide and maintain erosion control.

3.03 DISPOSITION OF MATERIALS

A. Dispose of demolished materials at a suitable location for off-site disposal in accordance with Laws and Regulations. Transport all debris, rubbish, and other materials, including all vegetation removed during clearing and grubbing activities, from the site weekly (at a minimum).

B. Burning of materials will not be permitted on the site.

END OF SECTION 31 10 00

SECTION 31 23 00

EXCAVATION AND FILL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete all general or miscellaneous excavation and fill operations at the site including, but not limited to:

1. General stripping, excavation, and stockpiling of soil materials. Specific requirements for trenching are described in Section 33 05 28, Trenching and Backfilling for Utilities.

2. Hauling, placing, and compacting soils.

3. General site grading.

4. Elevation, grade, and material thickness requirements.

B. Related Sections

1. Section 31 23 16 Waste Excavation

2. Section 32 92 00 Turfs and Grasses

3. Section 33 05 28 Trenching and Backfilling for Utilities

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. American Society for Testing and Materials (ASTM)

a. ASTM D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

3. Minnesota Pollution Control Agency Best Management Practices for the Off-Site Reuse of Unregulated Fill

4. Occupational Safety and Health Standards-Excavations (OSHA)

a. OSHA set forth in 29 CFR 1926, Subpart P.

1.03 SUBMITTALS

A. Submit for approval a Materials Handling Plan prior to excavation and transport of any materials. Materials and Handling Plan shall include:

1. Section A: Project Coordination

a. Resume of Project superintendent(s)

b. Identification of key personnel

c. Detailed Project staffing plan showing staffing levels and numbers for each task and phase of the Work, along with any plans for shift work

d. List of major equipment, systems, and material

e. List of permits and approvals obtained by Contractor, including contact names, titles, and phone numbers for the permitting agency representative

2. Section B: Work Schedule

a. Contractor's initial Work schedule

3. Section C: Construction Facilities and Temporary Controls

a. Plan for how utilities will be managed during the Work

b. Plan for temporary utility services

c. A Site layout drawing showing the following information:

1) Location of Contractor's office trailer, if used

2) Location of laydown areas

d. Contingency plan that outlines steps that will be taken in response to failures of proposed sediment control structures or exceedances of water quality requirements

4. Section D: Excavation and Fill Plan

a. Contractor shall provide design for excavation deeper than 20'.

b. Vehicle and equipment requirements and descriptions, driver instructions, decontamination procedures, and emergency procedures.

c. Method of elevation control during excavation and filling

d. Number and types of ancillary equipment

e. Proposed sequence of material excavation, transport, and placement

f. Description of how survey verification will be coordinated with excavation and filling activities

g. Description of areas requiring long term and intermediate cover

h. Methods and procedures to ensure that waste-contact surface runoff does not leave the existing waste limits

B. Submit for information a list of sources of imported materials specified in this Section to Owner or Owner's On-Site Representative at least two weeks prior to delivery of materials to the Site.

C. Testing shall be conducted according to appropriate ASTM standards to conform required material properties or classifications specified in this Section.

D. Submit for approval a Proposed Stockpiling Plan which includes locations and types of proposed stockpiles prior to excavation and transport of any materials. Plan shall include access routes, flood protection, stockpile dimensions, restoration plan, sequencing and phasing, and erosion control measures.

E. Submit for review all other soil testing and survey data as specified in Section 01 45 00, Quality Control.

1. Owner or Owner's On-Site Representative may take samples of the material during the progression of the Work to verify compliance with the Specifications. Materials not meeting the Specifications shall be removed and replaced at Contractor's expense, including the cost for testing.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Upon delivery of materials to the Site, provide access for sampling or observation of loads by Owner or Owner's On-Site Representative prior to unloading.

B. Store materials where designated or as directed by Owner or Owner's On-Site Representative. Prevent segregation of graded materials and mixing of dissimilar materials during unloading, stockpiling, or removal from stockpile.

1.05 SEQUENCING AND SCHEDULING

A. Owner's On-Site Representative will be evaluating results of Contractor's independent registered land surveyor's grade, slope, and material thickness verifications. Owner's On-Site Representative will be evaluating results of Contractor's independent soil laboratory field and

laboratory soil test results, as described in Section 01 45 00, Quality Control. Do not proceed with subsequent operations until Owner and Owner's On-Site Representative have been notified and have been given opportunity to verify that Work meets the requirements of these Specifications.

1.06 JOB CONDITIONS

A. It shall be Contractor's sole responsibility to review available tests and reports, conduct additional tests, and otherwise determine to its own satisfaction the location and nature of all surface and subsurface features and the soil and water conditions that may be encountered.

B. Use of explosives will not be permitted.

C. Contractor shall be solely responsible for determining the means and methods for meeting the compaction requirements unless otherwise specified herein, except that compaction by flooding, puddling, or other means that involve saturation or over-wetting the soil will not be permitted.

D. Provide shoring, bracing, sheet piling, trench boxes, tie backs, and other measures required to perform all the Work in accordance with Laws and Regulations. Specifically, all excavations shall conform to the requirements of OSHA set forth in 29 CFR 1926, Subpart P.

1.07 ENVIRONMENTAL COMPLIANCE – IMPORT SOILS AND AGGREGATES

A. All sources of import soils and aggregates specified herein shall meet the MPCA definition of Unregulated Fill. Import soils and aggregates shall be free of contamination, invasive species, debris, roots, organic material, frozen materials, and recycled materials.

B. Contractor shall provide access to proposed source(s) for inspection by Engineer and Owner, and Owner reserves the right to reject a source if contamination is suspected.

1.08 QUALITY CONTROL

A. Source quality control:

1. The entire quantity required for imported products shall be obtained from a single source for each product, if possible. Contractor must obtain approval from Owner for all sources used through the procedures described in Section 01 45 00, Quality Control if it is necessary to use multiple sources for any material.

2. Contractor shall perform source quality control testing as described in Section 01 45 00, Quality Control.

3. Owner or Owner's On-Site Representative may take samples of the material during the progression of the Work to verify compliance with the Specifications. Materials not meeting the Specifications shall be removed and replaced at Contractor's expense, including the cost for testing.

B. Field quality control:

1. Perform field quality control as specified in Section 01 45 00, Quality Control.

1.09 TEMPORARY ENVIRONMENTAL CONTROLS

A. See Section 01 57 19, Temporary Environmental Controls, for Noise Control, Dust Control, Water Management and Control, and Cleaning requirements.

1.10 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Radon-free material free of wood, organic soils, peat, topsoil, debris, roots, sticks, brush, non-soil materials, and other unsuitable materials which in the opinion of Engineer will have a deleterious effect on the Work.

B. Boulders larger than 6 inches in diameter shall not be allowed.

C. Contractor shall furnish all materials designated "IMPORTED".

2.02 COMMON FILL

A. Common fill (salvaged)

1. All soil materials except organic soils and shall be free of vegetation, peat, debris, roots, sticks, brush, non-soil materials, and other materials which in the opinion of Engineer will have a deleterious effect on the Work.

2. Excavated onsite soils, free of organic matter or debris and rocks greater than 6 inches in diameter may be used as common fill.

3. Do not use high plasticity silt or clay (MH, CH) soils as common fill.

B. Common fill (imported)

1. All soil materials except organic soils and shall be free of vegetation, peat, debris, roots, sticks, brush, non-soil materials, and other materials which in the opinion of Engineer will have a deleterious effect on the Work.

2. Soil, free of organic matter or debris and rocks greater than 6 inches in diameter may be used as common fill.

3. Do not use high plasticity silt or clay (MH, CH) soils as common fill.

2.03 PIPE BEDDING (IMPORTED)

A. Pipe bedding material shall be in conformance with Mn/DOT Standard Specification 3149.2.F for Granular Bedding.

2.04 TOPSOIL

A. Topsoil (salvaged)

1. Topsoil (salvaged) or subsoils capable of sustaining vegetation, meeting the following requirements:

a. Natural soil material consisting of sand, silt, clay, and gravel or mixtures thereof, free of rubbish, waste, demolition debris, and other foreign/deleterious materials and containing no particles larger than 3 inches in the largest dimension.

b. No more than 5 percent by weight may be retained on a ¾-inch sieve.

c. Organic Content between 3% and 50%.

B. Topsoil (imported)

1. Topsoil (imported) shall be as specified in MnDOT Standard Specification 3877.2.A.

PART 3: EXECUTION

3.01 GENERAL

A. Maintain all waste-contact surface water runoff within the existing waste limits; carry-over of this runoff outside the existing waste limits is strictly prohibited.

B. Locate and protect overhead and underground utilities.

C. Construct excavations in accordance with applicable Laws and Regulations.

D. Remove and replace material not meeting these Specifications and native soils or compacted fill softened by frost, flooding or weather.

E. Provide temporary controls such as diversions and dewatering equipment to prevent surface runoff from entering excavations and to remove ponded water from excavations. Maintain excavations in a dry and stable condition at all times.

F. Extend excavations a sufficient distance to allow placement and compaction of bedding, encasement, and other required backfill materials, to prevent sloughing of materials into the excavation, and to permit observation of the Work by Owner or Owner's On-Site Representative. Excavate to sufficient depth to remove loose or disturbed soil. Avoid over-excavating sound, clean native soil.

G. Subsurface dewatering outside construction limits not permitted without Owner's permission.

H. See Section 33 05 28, Trenching and Backfilling for Utilities for additional specifications related to trenching and backfilling for utilities.

3.02 EXCAVATION

A. Soil Stripping

1. Strip and segregate Topsoil. Topsoil to be stockpiled for use in restoration activities.

2. Excavate to locations shown on the drawings. Material to be stockpiled as described in Section 3.03.

B. Waste Excavation

1. See Section 31 23 16, Waste Excavation for Waste excavation requirements.

C. Common fill

1. On-site soil material not classified as cover soil, topsoil that meets the conditions in Section 2.02.

2. Excavate to locations shown on the drawings. Material to be stockpiled as described in Section 3.03.

D. Bedrock Excavation

1. Excavate bedrock as necessary to support water and sanitary utilities.

2. Bedrock materials to be buried in low lying restoration areas agreeable to Owner. No bedrock materials may be placed under ramps, roads, embankment, or berm construction.

E. Peat Excavation

1. Excavate peat as necessary to support subgrade for ramps, roads, embankment, or berm construction.

2. Owner's Onsite Representative will determine if Peat materials are considered Waste, See Waste Excavation, or clean materials. Peat materials, determined to not be waste, to be

buried in low lying restoration areas agreeable to Owner. No peat materials may be placed under ramps, roads, embankment, or berm construction.

F. Excavation Adjacent to Existing Features

1. Contractor shall excavate adjacent structures or piping so as not to damage existing features that are specified to remain in place.

2. Necessary repairs to existing site improvements damaged by Contractor will be at Contractor's expense.

G. Maintenance of excavations and slopes:

1. Excavate and remove material outside the limits of the excavation that is unstable and constitutes potential slides, and material which falls or rolls into excavations for any reason.

2. Maintain slopes until substantial completion and acceptance of the work. Promptly repair slides, slip-outs, washouts, settlements, and subsidences that occur for any reason, and refinish the slope to the lines and grades indicated on the Drawings.

3.03 STOCKPILES

A. Maintain stockpile slopes to meet applicable Laws and Regulations.

B. Do not place any temporary stockpiles within drainage ways or wetlands. Stockpile locations shall be protected from flooding. All stockpile locations must be coordinated and approved by Owner or Owner's On-Site Representative.

C. Grade stockpiles to be free-draining and to present a uniform appearance.

D. Install erosion control devices around the stockpile as necessary to minimize erosion.

E. Maintain stockpiles in accordance with requirements of the SWPPP.

F. Furnish equipment suitable for soil conditions and compactive effort required to meet compaction criteria specified herein.

3.04 BACKFILL, FILL, AND COMPACTION

A. Place backfill and fill materials in layers not more than 12 inches in loose depth, except as noted. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content. Compact each layer to required percentage of maximum density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice. Scarify, remoisten, and recompact surfaces that have been dried, weathered, or loosened between lifts.

B. Do not place fill on soil layers requiring certification surveys until finished elevation documentation is approved by Engineer.

C. Place backfill materials at the locations and to the dimensions and thicknesses shown on the Drawings. Furnish equipment suitable for soil conditions and compactive effort required to meet compaction criteria specified herein.

1. Granular soils shall be compacted using vibratory mechanical compaction equipment.

2. Fine-grained soils shall be compacted using sheepsfoot mechanical compaction equipment.

3. Fill material consisting of cohesive, clayey soils shall be compacted with a sheepsfoot roller in lifts not exceeding the requirements herein.

D. Backfill and compact only with pre-approved materials and those called out on the Drawings.

E. Do not place frozen material or place fill on frozen or unsuitable subgrade.

F. Contractor shall remove and replace fill that is too wet to permit compaction as specified.

G. Uniformly compact each lift by operating equipment over the entire area prior to placing the subsequent lift.

H. Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift. Protect insulation by hand placement if necessary. Notify Engineer of any damage and repair as approved before proceeding.

I. Moisture content and density control:

1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil to prevent free water appearing on surface during or subsequent to compaction operations. Disc or otherwise thoroughly mix to distribute added water.

2. Remove and replace soil material that is too wet to permit compaction as specified.

3. Compaction by flooding or other means that involve saturation or over-wetting the soil will not be permitted.

J. General:

1. Place and compact any material within 3 feet of finished ground surface under pavements to minimum 100% of standard Proctor maximum dry density (ASTM D698) and within +/- 2% of optimum moisture content.

K. Common Fill

1. Place Common Fill for ramps, roads, embankment, berm construction, and restoration area as shown on the Drawings.

2. Place and compact Common Fill to minimum 95% of standard Proctor maximum dry density (ASTM D698) and at a water content matching the range of water content at which the standard proctor curve indicates a dry density of 95% or greater.

3. Proof roll and examine common fill subgrade to determine existence of soft areas, areas loosened by frost action or softened by flooding, weather, or unsuitable materials. Do not place common fill on existing waste or other unsuitable subgrade materials.

L. Pipe Bedding/Utility backfill:

1. This section applies to underground piping and utility structure installations that lie outside the lined portion of the landfill.

2. Pipe Bedding for piping:

a. Place a minimum of 6-inches of Pipe Bedding material in bottom of trench before laying pipe. Place bedding in maximum 6-inch lifts. Pipe Bedding materials shall extend across full width of the trench. Compact each lift to minimum 100% of standard Proctor maximum dry density (ASTM D698).

b. Place Pipe Bedding material in maximum 4-inch loose lifts under pipe haunches and compact each lift to minimum 100% of standard Proctor maximum dry density (ASTM D698) until firmly compacted to the pipe spring line.

c. Place Pipe Bedding material in maximum 6-inch lifts, compacting to minimum 100% of standard Proctor maximum dry density (ASTM D698) to an elevation at least 6-inches over the top of the pipe.

2. Pipe Bedding for utility structures:

a. Place a minimum of 6-inches of Pipe Bedding materials under utility structures. Place bedding in maximum 6-inch lifts. Pipe Bedding materials shall extend a minimum of 1 foot horizontally beyond utility structure footprint. Compact Pipe Bedding materials to minimum 95% of standard Proctor maximum dry density (ASTM D698). Finished surface of bedding shall be uniform and level.

b. After placing utility structures, backfill remainder of excavation with Common Fill.

3. Place and compact common fill to minimum 95% of standard Proctor maximum dry density (ASTM D698) taking care not to damage or misalign any pipe or utility structure.

M. Topsoil:

1. Place after completion of the Cover Soil or Common Fill layer installation.

2. Do not place topsoil layer until Cover Soil or Common Fill certification survey is completed and approved by Engineer.

3. Place topsoil in single uniform loose lift and minimize compaction during placement over entire area to be planted to a minimum depth of 6 inches. In the event that topsoil has been disturbed or is not of acceptable depth prior to application of sod, planting, or seed, add supplement topsoil in area to bring it up to the required depth. Work all areas receiving seed until the soil is completely fined and in a mellow condition, and to a smooth, even finish grade. Fill all holes, depressions and rivulets to ensure no disruption of established drainage patterns. Remove all rubble, sticks, branches, or stones and extraneous material over 3/4-inch diameter on the surface, which will interfere with the seeding.

4. Immediately prior to sodding, seeding, or planting, loosen topsoil to a depth of 3-inches on all areas using discs, harrows, tiller rakes, or hand tools as needed to produce fine grade and incorporate the compost into the soil.

5. Prepare ground so top of newly sodded, seeded, or planted areas will be flush with adjacent soil, adjacent walks, and permanent surfacing.

3.05 GRADING

A. Grade intermediate slopes to minimize erosion potential. Maintain temporary erosion controls as necessary to minimize erosion.

B. Smooth-grade finished ground on exterior slopes of berms, along access roads, and other areas disturbed by Contractor's activities, to uniform levels or slopes between points where elevations are shown, or between such points and existing ground.

C. Construct ditches and/or drainage swales to control run-on onto and run-off from topsoil and within the Construction Limits as directed by Owner's On-site Representative.

3.06 RESTORATION OF DISTURBED AREAS

A. Disturbed areas shall be restored by Contractor to conditions equal to or better than that present before areas were disturbed.

B. Disturbed areas shall be smooth graded with perimeter slopes 3 horizontal to 1 vertical or shallower.

C. Topsoil shall be placed on disturbed areas to a depth of not less than 6-inches in locations directed by Owner.

D. Turf will be established on disturbed areas as directed by Owner or Owner's On-Site Representative in accordance with Section 32 92 00, Turf and Grasses.

3.07 TOLERANCES

A. Construct the excavation and backfill Work within the dimensional tolerances given below. Alignment, elevation, thickness, and grade tolerances are acceptable deviations from the dimensions shown on the Drawings.

B. Alignment Tolerances (subgrade and embankment)

1. Road Centerlines: +/- 0.2 foot.

C. Elevation Tolerances:

1. Road Surfaces: +/- 0.2 foot.

2. Pipe Grade: +/- 0.1 foot.

D. Thickness Tolerances:

1. Topsoil: -0.0 foot, +0.2 foot

E. Grade Tolerances:

1. Restoration area: +0.2 percent to -0.0 percent (must maintain 0.5 percent minimum slope everywhere).

3.08 MAINTENANCE

A. Protect newly graded areas from traffic and erosion, and keep free of trash and debris. Maintain erosion control.

B. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

C. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

3.09 DISPOSITION OF MATERIALS

A. Manage debris resulting from the Work or encountered on Site in accordance with applicable Laws and Regulations. Debris may include abandoned electrical cable, abandoned well materials, or other man-made objects.

B. Burning of materials will not be permitted on the Site.

END OF SECTION 31 23 00

SECTION 31 23 16

WASTE EXCAVATION

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete all waste excavation operations at the site including, but not limited to:

1. Establishment of waste profile(s)

2. Waste excavation, screening, hauling, and disposal.

3. Monitoring of environmental conditions, including trash, odors, organic vapors, and vectors.

4. Implementation of environmental controls.

B. Related Sections

1. Section 31 23 00 Excavation and Fill

2. Section 31 23 19 Dewatering

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. Focused Remedial Investigation Report, Freeway Landfill and Freeway Dump. Prepared for Minnesota Pollution Control Agency. Barr Engineering Company. October 2009.

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 DEFINITIONS

A. Waste: existing buried waste that is present at the Site and will be removed in accordance with these Specifications

1. Acceptable Waste: represents a significant majority of the waste present at the site, including mixed municipal waste and ash, and will be disposed of at the primary licensed disposal facilities identified by Contractor

2. Unacceptable Waste: represents a small fraction of the waste that cannot be disposed of at the primary licensed disposal facilities. Could include suspected RCRA Subtitle C hazardous waste or other items not acceptable to the primary licensed facilities that might include vehicle batteries, tires, etc. This waste will be segregated and stockpiled in accordance with Section 3.03.

1.04 SUBMITTALS

A. Submit for approval list of Licensed Disposal Facilities that will be used for disposal of excavated waste.

1. Include documentation demonstrating that facilities meet project and regulatory requirements and have existing capacity to accept anticipated waste volumes

B. Submit for approval a Waste Excavation, Handling, and Disposal Plan prior to excavation of any materials. Plan shall include the following components:

1. Waste profile(s) from Licensed Disposal Facilities, clearly listing what types of waste would be included under each profile

2. Methods and sequencing of excavation

3. Waste classification and screening procedures as required by this Section

4. Location and management of waste stockpiles

5. Approach for limiting and controlling water in excavations (may reference Dewatering Plan, see Section 31 23 19, Dewatering)

6. Contingency Plan to be implemented if Minnesota River elevation rises to levels specified in Section 3.03.

7. Trucking Procedures and Haul Route to Licensed Disposal Facilities

8. Approach and products to be used to comply with Odor Control and Vector Control requirements of this Section

C. Submit for approval a Sampling and Analysis Plan to be implemented if, based on Contractor's Waste Screening procedures, excavated material is inconsistent with the established waste profiles. Sampling and Analysis Plan shall describe Contractor's sampling methodology, approach, and subcontracted analytical laboratory.

1. Samples shall be collected by appropriately trained personnel

2. Laboratory shall be accredited by Minnesota Department of Health

3. Sample methodology and analytical methods shall meet the requirements of the licensed disposal facilities

D. Submit for approval an Excavation Environmental Controls Plan, including the following:

1. Approach to minimize generation of odors and discourage vector intrusion

2. Quantitative and/or qualitative descriptions of limits that will be in place to monitor air quality, odors, and presence of vectors. Limits shall be no less restrictive than the following:

   a. Organic Vapors – sustained vapor readings over a 30 minute period shall not exceed background readings taken at upwind construction limits.

   b. Odors – sustained qualitative assessment of construction-related odors over a 30 minute period shall not exceed assessment taken at upwind construction limits.

3. Monitoring locations, methods and frequencies

4. Product specifications

5. Approach to implement control measures when necessary

E. Submit for documentation records of waste disposal (weigh tickets) at licensed disposal facilities.

1.05 SEQUENCING AND SCHEDULING

A. Flood protection berm must be constructed prior to excavation within the Flood Protection Boundary.

1.06 TEMPORARY ENVIRONMENTAL CONTROLS

A. See Section 01 57 19, Temporary Environmental Controls, for Noise Control, Dust Control, Water Management and Control, and Cleaning requirements.

1.07 EXCAVATION ENVIRONMENTAL CONTROLS

A. Provide methods, means, and facilities to minimize odors, prevent blowing trash, control vectors, and control volatile organics that are produced by waste excavation activities.

B. Identify areas that may require long term or intermediate cover to control odors, minimize vectors, and control blowing trash.

C. Monitor for presence of odors, vectors, and volatile organics at the frequencies and locations identified in Excavation Environmental Controls Plan. If monitoring identifies the presence of odors, vectors, or air quality in excess of the criteria listed in Excavation Environmental Controls Plan, implement control measures. If control measures are ineffective at rectifying the situation, then cease the work that is generating the exceedance of criteria until a plan can be established

and implemented to bring the situation back in compliance with the criteria identified in Excavation Environmental Controls Plan.

D. Recover trash that blows away from exposed working faces or stockpiles.

E. In addition to Contractor's monitoring, Owner or Owner's On-Site Representative may perform independent monitoring. If Owner or Owner's On-Site Representative's monitoring indicates the presence of odors, vectors, or organic vapors in excess of the criteria listed in Excavation Environmental Controls Plan, then Contractor shall implement control measures.

1.08 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 POLYETHYLENE SHEETING

A. Minimum thickness of 10-mil

2.02 SPRAY APPLIED CONTROL MATERIALS

A. Posi-shell Cover System, or equivalent

2.03 COMMON FILL

A. See Specification Section 31 23 00, Excavation and Fill for Common Fill requirements

PART 3: EXECUTION

3.01 GENERAL

A. See Section 31 23 00, Excavation and Fill for additional excavation requirements.

3.02 WASTE PROFILING

A. Contractor shall establish one or more waste profiles with Licensed Disposal Facilities that are appropriate to handle the Acceptable Waste. Types of waste encountered during investigation activities are included in the Focused Remedial Investigation Report (Barr 2019). Waste profile(s) should be established to include, at a minimum, the following material types.

1. Mixed Municipal Solid Waste

2. Ash

3.03 EXCAVATION

A. Waste Excavation

1. Contractor shall excavate waste as shown on the Drawings.

2. Contractor shall prevent waste from contact with areas outside of the existing waste limits and shall prevent transport of waste by tracking, erosion, wind erosion, or other transport mechanisms.

3. Any waste spills located outside of existing waste limits shall be removed and cleaned up immediately.

4. Excavation will be guided by visual field characterization with Owner or Owner's On-Site Representative conducting a review for acceptance of the extent of excavation. Verification of waste material excavation extent shall include:

a. Horizontal Limits

1) The horizontal limits of the waste as indicated on the Drawings, are approximations based on analysis and evaluation of soil borings and other geotechnical information.

2) Contractor will extend excavation limits horizontally until the limits of the waste material has been reached (with exception listed below), as directed and verified by the Owner or Owner's On-Site Representative.

a) In several locations, waste will be left behind, as shown on the Drawings. In those locations, excavate to the limits that will prevent damage to the adjacent facilities (e.g., paved surfaces and buildings).

3) Excavation beyond the limits identified on the Drawings should only occur after Contractor receives direction from Owner or Owner's On-Site Representative.

b. Vertical Limits

1) The vertical limits of waste has been approximated based on analysis and evaluation of soil borings and other geotechnical information.

2) If clean soils are encountered prior to bedrock, then test pits to a depth of at least three feet below apparent waste bottom or to bedrock, whichever is shallower, will be conducted at a rate of three per acre to visually confirm no underlying waste materials are present in the sector. Excavation in that sector will be deemed complete if visual inspection finds primarily "clean" or "native" soils in the test pits.

5. Do not place fill over excavated areas until excavated area is documented (including photo), surveyed, and approved by Owner or Owner's On-Site Representative.

6. If significant areas of apparently clean soil are encountered within an area targeted for waste excavation, the potentially clean will be segregated and temporarily stockpiled for screening by Owner for acceptance prior to use.

7. If soil conditions are encountered that cannot be adequately dewatered prior to excavation, the target elevation of waste shall be 1 foot below the (construction drawing's) excavation surface (or bedrock if encountered sooner). Excavated material shall be inspected, and excavation shall continue if waste is present.

8. If needed, dewater or stabilize free liquids for any excavated wet Waste within the excavation area prior to loading for offsite transport and disposal. Any dewatering must meet Section 31 23 19, Dewatering.

9. Amount of exposed waste material shall be minimized in an effort to reduce generation of odors and blowing trash, and to discourage vector intrusion.

10. Intermediate and long-term cover may be required over waste stockpiles or open excavation faces to manage blowing and loose waste, to discourage water intrusion, to control odor, and to comply with Stormwater Pollution Prevention Plan (SWPPP) requirements.

    a. Intermediate cover will be required when conditions result in the need to control blowing of Waste materials or excessive odors, in accordance with Contractor's Excavation Environmental Controls Plan or as directed by the Owner's On-Site Representative.

    b. Long-term cover will be required for compliance with the Stormwater Pollution Prevention Plan (SWPPP) requirements.

    c. Intermediate cover will consist of a spray-applied product (such as Posi-shell or approved equivalent) or a thin layer of Common Fill.

    d. Long-term cover will consist of a minimum of 6-inches of Common Fill seeded per Stormwater Pollution Prevention Plan (SWPPP) requirements.

B. FLOOD PROTECTION

1. During Waste excavation, Contractor shall be responsible for maintaining flood projections as shown on the Drawings. All active waste excavation, stockpiling, and loading areas shall be protected from Minnesota River flooding throughout the work.

2. Flood protection will be accomplished by a combination of relying on existing waste embankments and construction of temporary soil embankments, Flood protection in specific areas may transition from one approach to the other, with transition work

occurring during wintertime when flood risk is lowest, and river and weather forecast are favorable for maintaining non-flood conditions.

3. Contractor shall monitor Minnesota River forecasts at all times during construction. If, at any time, work is performed outside of the flood protection berm and the river is forecasted to rise within two vertical feet of the active work area, Contractor shall implement Contingency Measures, as detailed in Waste Excavation and Relocation Plan submittal.

C. WASTE CLASSIFICATION AND SCREENING

1. Contractor shall be responsible for on-going screening of excavated material and verifying that it is in compliance with established waste profile(s). Owner may also screen excavated material and will promptly inform Contractor of Owner's findings.

2. If areas of potential Unacceptable Waste are identified, contractor shall immediately notify Owner's On-Site Representative and implement the following procedures:

   a. Do not ship material from Site until more information is gathered to inform Waste management decisions.

   b. If possible, discontinue excavation in area of concern until further characterization has been made.

   c. If necessary, remove material in question and place either over existing waste or on top of 10-mil (min) polyethylene sheeting. Cover with 10-mil (min) polyethylene sheeting when inactive. Clearly delineate and identify material so that other material does not become co-mingled with material in question.

   d. Collect and analyze representative characterization samples, per requirements of Licensed Disposal Facility, and in accordance with approved Sampling and Analysis Plan.

   e. Inform Owner's On-Site Representative of disposal plan and disposal cost.

   f. Dispose of material after acceptance by disposal facility and upon approval by Owner's On-Site Representative

3. If waste is suspected to contain hazardous material, Contractor shall notify Owner or Owner's On-Site Representative and proceed with handling, storing, testing, and disposing in accordance with procedure outlined above and hazardous waste regulations

4. The cost to excavate, segregate, stage, evaluate, load, haul, and dispose of Unacceptable Waste will be agreed upon prior to disposal once a suitable disposal facility can be determined.

3.04 EQUIPMENT DECONTAMINATION

A. Construct decontamination pads at exit of each removal area and at exit from project area.

B. Prior to haul truck leaving site, truck shall pass through the decontamination area. If necessary, brush any spilled or loose waste or impacted soil from haul trucks. If dry brushing and driving over rattle plate is insufficient to remove material from outside of trucks and prevent tracking, then spray with water to remove material. Allow water to drain back into removal area and infiltrate into soil.

C. After completion of project or excavation in a particular area, remove decontamination pad and dispose.

D. Decontaminate all equipment prior to demobilizing from site.

3.05 HAULING

A. Any trucks leaving the site shall be decontaminated, covered, and in compliance with applicable laws and regulations.

B. Any trucks leaving the site shall be watertight such that liquids do not drip or drain from the truck during transport.

C. Waste shall be in a condition to meet requirements of landfill, including passing paint filter test.

END OF SECTION 31 23 16

SECTION 31 23 19

DEWATERING

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete excavation dewatering at the site including, but not limited to:

1. Collection of water from excavation areas and treatment for solids removal.

2. Discharge of treated water from the excavation area.

3. Management of solids generated during water treatment.

B. Surface water runoff volumes and groundwater levels vary from area to area and season to season, and dewatering may be required for construction of this Project. Furthermore, depending on groundwater table elevation, some excavated materials may require dewatering prior to transport. The need for dewatering shall be determined by the Contractor, and dewatering shall be the responsibility of the Contractor.

C. Dewatering activities shall be coordinated with Owner.

D. Related Sections

1. Section 01 57 19 Temporary Environmental Controls

2. Section 31 23 16 Waste Excavation

3. Section 31 25 00 Erosion and Sediment Control

1.02 DEFINITIONS

A. Non-Contact Water: water (stormwater, groundwater, or surface water) that does not come into contact with waste material.

B. Contact Water: water (stormwater, groundwater, or surface water) that comes into contact with waste material.

1.03 PERFORMANCE REQUIREMENTS

A. Minimize contact water generation to the extent practical.

B. Maintain all contact surface water runoff within the existing waste limits; carry-over of this runoff outside the existing waste limits is strictly prohibited.

C. Water that accumulates within an excavation is allowed to infiltrate.

D. Water that is removed from an excavation will require management in accordance with this specification.

1.04 SUBMITTALS

A. Work plan for approval including:

1. Dewatering plan describing the means and methods that will be used to successfully accomplish water collection, treatment, and discharge of dewatering water during the Work. Information in the dewatering plan shall include, but not be limited to, the following:

a. Description of key equipment components (i.e., tanks, pumps, filters, flow meters, etc.) including supplier and model name, operational characteristics and expected performance for solids removal.

b. Plans showing the layout of the water collection, treatment, and conveyance system.

c. Description of operation of the collection, treatment, and conveyance equipment (estimated flow-rates and standard operating procedures [SOPs]).

d. Description of discharge and energy dissipation system.

e. The method and location of dewatering and means of disposal of waste-contact dewatering water.

f. Anticipated start and end dates of dewatering.

2. Submit plan a minimum of two weeks prior to the initiation of dewatering activities.

3. Approval of dewatering plan does not relieve Contractor from complete responsibility for water management at the site.

B. Test results and certificates including:

1. Records of the discharge rate and total volume and duration of treated water discharge.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Contractor shall carry out the control of water in compliance with all federal, State and local applicable stream discharge and pollution prevention requirements.

B. Contractor shall monitor volume of water pumped through use of an hour meter on the pump(s) with pump chart or flowmeter(s) and shall maintain pumps and discharge lines in good working condition.

C. All discharge shall be in accordance with appliable permits (SWPPP, MCES, or other).

D. Contractor shall minimize sediment transport during dewatering through use of constructed sumps, filter socks, or other measures. Contractor shall not discharge brown water to the river.

E. See Section 01 57 19, Temporary Environmental Controls for additional requirements.

1.06 SEQUENCING AND SCHEDULING

A. Dewatering system(s) shall be mobilized and ready for utilization prior to commencing excavation operations.

B. Work that may be impacted by groundwater, such as the waste excavation, should be sequenced when possible to be completed during time of year when groundwater levels are low to reduce dewatering quantities.

C. Reduce contact water by preventing stormwater from running into open excavations where possible.

1.07 PERMITS

A. Obtain a Minnesota DNR Water Appropriation Permit for use with groundwater dewatering activities.

B. SWPPP: see Section 01 57 13, Temporary Erosion and Sediment Control for SWPPP requirements.

C. MCES Discharge Permit: see section 01 57 19, Temporary Environmental Controls for MCES Discharge Permit requirements.

D. Obtain other permits Contractor may need for discharging water (e.g., MPCA Contaminated Groundwater Pump-Out General Permit)

1.08 QUALITY ASSURANCE

A. Contractor shall be responsible for evaluating the need to dewater as well as the design and adequacy of the dewatering system(s). Contractor shall provide dewatering system(s) sufficient to maintain the Work areas in a dewatered condition, as necessary and as specified. Contractor shall implement dewatering systems to perform as follows:

1. Effectively reduce the hydrostatic pressure if necessary and lower the groundwater levels below the excavation.

2. Develop a substantially dry and stable subgrade for execution of construction operations.

3. Prevent damage to adjacent properties, buildings, structures, utilities, and other work as a result of settlement or other groundwater-related effects; and dewatering.

4. Spoils (excavated material) dewatering shall be performed in a designated areas (within existing waste footprint) to promote infiltration.

5. Provide sediment removal/filtering methods to meet NPDES discharge requirements to receiving water bodies.

6. The dewatering system(s) shall be operated and maintained by Contractor.

7. Contractor shall immediately furnish backup dewatering systems if other dewatering systems fail unexpectedly (including potentially off-site or sanitary sewer discharge/disposal if permitted).

B. Seepage and overland runoff flow into the Work area shall be intercepted, collected, and removed as needed to minimize Contact Water generation and for proper performance of the Work

C. Modify dewatering procedures that cause, or threaten to cause, excessive ground movement or damage to new or existing facilities, so as to prevent further ground movement damage.

1.09 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 EQUIPMENT

A. Contractor shall be responsible to have pumps, hoses, and other equipment necessary for dewatering.

B. Provide back-up equipment as necessary for replacement and for unanticipated emergencies.

PART 3: EXECUTION

3.01 GENERAL

A. Contractor shall be aware that flows will vary in proportion to recent rainfall events, and with rapid and heavy rains, ponded water may accumulate. Contractor shall be responsible for and

take measures to protect his personnel, equipment, and supplies from such an event should conditions render.

B. Coordinate all dewatering activities with Owner and Owner's On-Site Representative.

C. Perform dewatering in accordance with approved Dewatering Work Plan. Keep Engineer advised of any changes made to accommodate field conditions and, on completion of the dewatering system implementation, revise and resubmit Dewatering Plan as necessary to indicate the installed configuration.

D. Do not dewater wetlands.

E. Areas shall be dewatered as necessary so construction of berms, roads, subgrade, cover soils, ditches, and other structures are completed under dry conditions.

F. All dewatering activities must comply with Section 01 57 13, Temporary Erosion and Sediment Control. Non-Contact Water shall be routed to drain towards existing surface water as determined per approved Dewatering Plan in accordance with applicable permits. Water shall be discharged in such a manner as not to cause erosion or damage to adjacent property.

G. Contractor shall minimize cross contamination of Non-Contact water with Contact water to minimize volumes necessitating treatment.

H. Contact Water runoff shall be directed away from clean materials and areas and contained within the existing waste boundary.

I. The Contractor shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.

J. Contractor shall be solely responsible for managing and coordinating related work that affects the quality and quantity of the water that is discharged from the excavation area. Continuously restrict stormwater runoff from entering the excavation area to minimize the volume of water to be managed.

K. Sequence and coordinate work so that the dewatering system is operational prior to beginning operations that will generate water including but not limited to: dewatering of excavation areas, precipitation into earthwork areas, and decontamination activities.

L. Operate dewatering system so that effects of dewatering do not adversely affect structures and facilities.

3.02 DEWATERING SYSTEM EQUIPMENT OPERATION

A. Operate the collection and treatment equipment in conformance to the approved Water Collection, Treatment, Discharge, and Monitoring Plan. It is anticipated that treatment may involve the following processes:

1. Water can be allowed to infiltrate. Contact water shall be infiltrated within existing waste limits. When conditions require that additional dewatering is necessary, water can be directed away from active work areas to infiltrate.

2. When conditions require active pumping and removal of water, then Contractor shall pump water from the work areas for treatment and discharge in compliance with permits.

3. Contact water may require treatment for contaminants before discharge as required by permits. All water will require control and removal of sediment before discharge. Contact water sediment can be dewatered of free liquids and managed with the Waste.

4. Solids removal will be accomplished either by pump intake screening, silt fencing, temporary settling basins/tanks, or other suitable means to remove suspended solids.

B. At a minimum, treat the water to remove solids to below 50 mg/L total suspended solids (TSS) prior to discharging.

3.03 IN PLACE MANAGEMENT APPROACHES

A. Excavated saturated material shall be placed in an area targeted for further excavation. If the saturated material is placed in an area that is not targeted for further excavation, materials will need to be placed on plastic sheeting and runoff will need to be controlled to prevent impacting the underlying soils.

3.04 MONITORING OF WATER TREATMENT AND DISCHARGE

A. Monitor water discharges from the dewatering system in accordance with the monitoring plan submitted.

B. Discharge should include energy dissipation at outlet.

3.05 MANAGEMENT OF WATER TREATMENT SOLIDS

A. Recover, dewater, and manage any solids that are removed by or accumulated in water treatment equipment as described for the water collection, treatment, discharge, and monitoring plan prepared by Contractor. Solids may be transported to an approved landfill in accordance with Section 31 23 16, Waste Excavation.

END OF SECTION 31 23 19

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROL

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete erosion and sediment control at the site including, but not limited to:

1. Provide temporary erosion control to meet the requirements of all federal, state and local agencies.

a. Contractor shall implement all requirements of the project-specific Stormwater Pollution Prevention Plan (SWPPP).

2. Prevent transport of soil and removed sediment materials from the sites of the Work in compliance with this Section of the Specifications.

B. Where conflicts exist between this Specification and the project-specific SWPPP, requirements of the project-specific SWPPP shall take precedence.

C. Related Sections

1. Section 01 57 13 Temporary Erosion and Sediment Control

2. Section 02 41 00 Demolition

3. Section 31 01 00 Site Preparation

4. Section 31 10 00 Clearing and Grubbing

5. Section 31 23 00 Excavation and Fill

6. Section 31 23 19 Dewatering

7. Section 32 92 00 Turfs and Grasses

8. Section 33 05 28 Trenching and Backfilling for Utilities

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

2. Minnesota Pollution Control Agency (MPCA)

    a. General Permit No. MN R100000.

3. Authorization to Discharge Stormwater Associated with Construction Activity Under the National Pollutant Discharge Elimination System/State Disposal System (NPDES) Permit Program.

4. Stormwater Pollution Prevention Plan (SWPPP) for the work

1.03 SUBMITTALS

A. Weekly/storm event inspection forms to ensure permit compliance.

B. Submit all inspection records completed as a part of the NPDES Permit to Owner at the end of the project.

C. Submit manufacturer and product information for erosion control measure products.

1.04 QUALITY ASSURANCE

A. Owner may stop work on the project if Contractor is operating in violation of the erosion control permit or these Specifications. Commence to diligently restore the project to conform to the conditions of the permit, the SWPPP, and these Specifications within 24 hours. If, in Owner's opinion, Contractor has not, within 24 hours after work stoppage, commenced to diligently restore the project to conform to the conditions of the permit, then Owner may, without further notice to Contractor, take actions to immediately restore the project to the conditions of the permit and these Specifications. The cost of actions by Owner required to restore the project to conditions of the permit and these Specifications will be paid by Contractor.

B. All inspection records completed by the Contractor as a part of the Permit compliance shall be submitted to the Owner at the end of the Project.

C. The Contract Documents, compliance documentation, and permits shall be available at the construction site in the field office for inspection by federal, state, and local officials as required by the permit for the duration of the Work.

D. Owner and Contractor shall maintain a record of all inspections of the Site as required by the permits, and shall include at a minimum:

    1. Date and time of inspections

    2. Name of inspector

3. Findings of inspections

4. Corrective actions taken (including date and time)

5. Documentation of changes to the Temporary Erosion and Sediment Control Plan made during construction.

6. Date of all rainfall events (including total precipitation)

7. Documentation of any active runoff discharges and their color/clarity based on visual inspection.

1.05 SEQUENCING AND SCHEDULING

A. Transfer of responsibility for the NPDES Application for General Stormwater Permit for Construction Activity (MNR100001) and the associated Storm Water Pollution Prevention Plan (SWPPP) including all compliance measures and procedures to Contractor upon award of Contract. The representative permit and SWPPP will be prepared by Owner and presented to Contractor at the pre-construction meeting for review, finalizing and signatures. The permit fee and submittal will be administered by Owner.

B. Install BMP's and erosion and sediment control measures specified in this Section and in accordance with the Drawings, the SWPPP, or as directed by Owner or Owner's On-Site Representative prior to any disturbance to existing site features conditions.

C. Maintain and replace the erosion and sediment controls for the duration of the Project as necessary in accordance with the Drawings, the SWPPP, this Section of the Specifications, and as directed by Owner or Owner's On-Site Representative.

D. Coordinate the Work so as to reduce to a minimum the lag time between the initial and final phases of the combined work and establish erosion and sediment control as soon as possible after the graded areas have had topsoil placed or finish graded.

E. For areas where vegetation is required, maintain erosion and sediment controls until an effective vegetative cover has been established.

1.06 TEMPORARY ENVIRONMENTAL CONTROLS

A. See Section 01 57 19, Temporary Environmental Controls, for Noise Control, Dust Control, Water Management and Control, and Cleaning requirements.

1.07 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 CONCRETE WASHOUT MANAGEMENT AREA

A. Concrete washout management area shall be as specified on the Drawings. An impermeable liner is required where sandy soils exist to prevent infiltration of washout.

2.02 CONSTRUCTION ENTRANCE

A. Construction entrance shall be as specified on the Drawings.

2.03 CULVERT/INLET PROTECTION

A. Contractor shall provide culvert/inlet protection as shown on the Drawings, SWPPP, or as approved by Engineer. The protection measures shall be approved devices and methods to prevent the transportation of sediments into the storm sewer system.

B. Contractor responsible for cleaning out sediment from culverts/inlets within work area.

2.04 EROSION CONTROL BLANKET

A. Erosion control blanket shall be as specified in Mn/DOT Standard Specification 3885.2, Category 30, or approved equal.

2.05 HYDROMULCH - BONDED FIBER MATRIX

A. Hydromulch shall be as specified in Mn/DOT Standard Specification 3884.2.B.4 (Bonded Fiber Matrix). Product shall be installed per manufacturer's specification. Mulch product must be appropriate for slope steepness and time needed to establish vegetation.

B. Owner or Engineer may request submittal for types of mulch material proposed for use.

C. Other hydromulch products may be considered by Owner or Owner's On-Site Representative, based on the application area. Contractor to submit alternative products and receive written approval prior to substitution.

2.06 SEDIMENT CONTROL LOG

A. Sediment control log shall be as specified in Mn/DOT Standard Specification 3897 and as specified on the Drawings.

B. Sediment control log shall be a minimum of 9 inch diameter.

C. Straw-filled sediment control log shall be staked at a minimum of every 4 feet. Straw sediment control log utilized as a ditch check shall be staked every 2 feet.

2.07 SILT FENCE

A. Silt fence shall be Machine Sliced as specified in Mn/DOT Standard Specification 3886, except that support posts shall be no further than 4 feet apart.

2.08 SPRAY TACKIFIER

A. Spray tackifier shall conform to Mn/DOT Standard Specification 3884. Contractor shall use Ramy Turf Hyper-Tack (at an application rate of 5 lbs/acre) or approved equal.

2.09 TEMPORARY SEDIMENTATION BASIN AND OUTLET STRUCTURE

A. Temporary Sedimentation Basins shall be excavated below existing grade to contain a runoff volume as indicated on the Drawings or a volume otherwise determined by the Contractor for proper implementation of the Stormwater Pollution Prevention Plan and NPDES permit's minimum basin volume per acre of disturbed area.

B. Contractor shall size, install and maintain berms and ditches for the redirection of all runoff in accordance with the Stormwater Pollution Prevention Plan. As drainage conditions change during construction, Contractor shall be responsible for coordinating and establishing the appropriate berms and ditches to direct runoff to temporary sedimentation locations.

2.10 TEMPORARY SEEDING & MULCHING

A. Temporary seeding or mulching of disturbed areas as Specified in Section 32 92 00, Turf and Grasses.

PART 3: EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Temporary erosion and sediment control activities will be required through the duration of the project as set forth in the SWPPP.

B. Maintain the appearance and functionality of the temporary sediment and erosion control measures throughout the duration of the Work.

C. Temporary sediment and erosion control measures shall be installed, maintained and removed in accordance with the requirements of the SWPPP.

D. Sweep roads free of all sediment which is transported onto them as a result of construction. Sweep weekly if sediment is on the streets or more frequently if requested by Owner. The cost for sweeping shall be at Contractor's expense.

E. Conduct all erosion prevention and sediment control work in accordance with these Specifications, the SWPPP, and as shown in the Drawings.

F. Temporarily protect or permanently cover all exposed soil areas within 7 days.

G. Construct temporary erosion controls where there is evidence that sediment is being transported from the work area, where drainageways flow from the work area, and elsewhere as required to control erosion.

H. Schedule operations to minimize the amount of area disturbed and thus susceptible to erosion at any given time.

I. Design, construct, and maintain diversion berms and ditches to control the 25-year, 24-hour storm events (or larger).

J. Remove and dispose of all temporary erosion controls when turf has been fully established or when earthwork has eliminated the possibility of sediment transport from the work area and in accordance with the SWPPP.

K. See Section 01 57 13, Temporary Erosion and Sediment Control for additional requirements.

3.02 CONCRETE WASHOUT MANAGEMENT AREA

A. Contractor shall furnish the appropriate measures for proper concrete washout. Concrete washout shall not be discharged at grade or otherwise allowed to flow into existing waterways, groundwater or storm sewers.

B. Washout must be disposed of in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the work.

C. Concrete washout at the batch plant is an acceptable alternative.

3.03 CONSTRUCTION ENTRANCE

A. Construct construction entrance to the dimensions and material thicknesses shown on the Drawings and the SWPPP.

B. Clean and maintain at the end of each work day.

C. Contractor shall be responsible for removal and disposal of construction entrances.

3.04 CULVERT/INLET PROTECTION

A. Provide culvert/inlet protection in accordance with the SWPPP.

3.05 EROSION CONTROL BLANKET

A. Install in accordance with Mn/DOT Standard Specification 2573, manufacturer's recommendations, the SWPPP, and as shown on the Drawings.

B. Install erosion control blanket on slopes 4 horizontal to 1 vertical or steeper.

C. Unless otherwise indicated by the manufacturer, install the erosion control blanket as follows:

1. Prepare the soil before installing the blankets, including smoothing all ruts and gullies, removing exposed rocks/protrusions, seeding and soil amendments if applicable.

2. Erosion blankets with natural netting must be handled with care. Stretching of the net during installation may cause the straw to fall out. Contractor is responsible for maintaining an effective BMP.

3. Roll the blankets down the slope. If blankets must be spliced down the slope, place blankets end over end (shingle style – upstream blanket overlapping downstream blanket) with approximately 12-inch overlap. Staple through the overlapped area, per manufacturer's recommendations.

4. Overlap adjacent blankets at least 6 inches and staple through overlapped area.

5. Erosion control blankets shall not be stretched during placement. Unnecessary tension may cause premature erosion blanket failure.

6. Use metal staples. Staples are to be inserted a maximum spacing of every 2 feet in all directions in order to avoid tenting up of the erosion mat. Erosion blankets that tent up indicates a defective installation and must be reinstalled at the direction of the SWPPP inspector. Contractor to bear this cost.

7. NOTE: Spacing requirement will be strictly enforced. Failure to adhere to the staple spacing requirements will result in withholding of payment to Contractor for the entire amount of erosion control blanket placement until such time as the staple spacing requirements are met.

D. Maintenance:

1. Repair soil, re-seed, fertilize and re-install erosion control blanket on any areas on which the original blanket has eroded, washed away, or blown off, as directed by Owner or Owner's On-Site Representative.

3.06 HYDROMULCH - BONDED FIBER MATRIX

A. Bonded fiber matrix shall be installed and maintained in accordance with Mn/DOT Standard Specification 3884 and as detailed in the SWPPP.

3.07 SEDIMENT CONTROL LOG

A. Install, anchor, and maintain in accordance with Mn/DOT Standard Specification 2573, manufacturer's recommendations, the SWPPP, and as shown on the Drawings.

3.08 SILT FENCE

A. Install in accordance with Mn/DOT Standard Specification 2573, manufacturer's recommendations, the SWPPP, and as shown on the Drawings. Four-foot maximum post spacing. 24 inches minimum post embedment below grade.

B. Remove and properly dispose of silt fence at completion of Project and the establishment of vegetation. Removal of silt fence shall not cause unnecessary ground disturbance. Posts must be removed and silt fence fabric shall not be cut off at grade during silt fence removal.

3.09 SPRAY TACKIFIER

A. Spray tackifier shall be installed and maintained in accordance with Mn/DOT Standard Specification 3884 and as described in the SWPPP.

3.10 TEMPORARY SEDIMENTATION BASIN AND OUTLET STRUCTURE

A. Temporary sedimentation basins shall be installed in accordance with the SWPPP. Basin locations and sizes shown on the Drawings are for the temporary drainage areas shown on the Drawings. Contractor shall be responsible for establishing temporary drainage areas, verifying required storage volume and providing the appropriate size and location of basins for the work.

B. Temporary sedimentation basins shall be installed in accordance with with Mn/DOT Standard Specification 2573.3.A

C. Temporary sedimentation basins shall be maintained in accordance with Mn/DOT Standard Specification 2573. Contractor shall drain and remove sediment when collected sediment comprises 50% or more of the storage volume.

3.11 TEMPORARY SEEDING & MULCHING

A. Contractor shall furnish and install temporary seeding and mulching on disturbed areas as required by the SWPPP.

B. Temporary seeding and mulching shall be performed in accordance with Section 32 92 00, Turf and Grasses.

END OF SECTION 31 25 00

SECTION 31 37 00

RIPRAP

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to furnish and install riprap including, but not limited to:

1. Granular Filter

2. Riprap

B. Related Sections

1. Section 31 05 19.13 Geotextiles for Earthwork

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Submit for information a list of sources of imported materials specified in this Section to Owner or Owner's On-Site Representative at least two weeks prior to delivery of materials to the Site.

B. Submit for review all other soil testing and survey data as specified in Section 01 45 00, Quality Control.

1. Granular Filter

2. Riprap

1.04 QUALITY CONTROL

A. Perform source quality control and field quality control as specified in Section 01 45 00, Quality Control.

1.05 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Materials used for riprap shall be durable washed angular (crushed) igneous rock (no limestone or sandstone), of approved quality, sound, hard, and free of seams, cracks, and other structural defects. The stone shall be free of contamination by soil and other debris prior to incorporation in the Work.

2.02 GRANULAR FILTER

A. Granular filter to meet the requirements of Mn/DOT Standard Specification 3601, Table 3601.2-2 Granular Filter Material.

2.03 RIPRAP

A. Riprap shall be field-stone riprap meeting the requirements of Mn/DOT Standard Specification 3601, Table 3601.2-1 for the Class indicated on the Drawings.

2.04 RIPRAP UNDERLAYMENT (GEOTEXTILE)

A. Riprap underlayment (geotextile) shall be as specified in Section 31 05 19.13, Geotextiles for Earthwork.

PART 3: EXECUTION

3.01 INSTALLATION

A. Place riprap and granular filter in the locations and depths shown on the Drawings.

B. Areas on which riprap are to be placed shall be graded and dressed to lines and grades shown on Drawings or as directed by Owner's On-Site Representative.

C. Contractor shall place geotextile under riprap and granular filter and cover completely. No geotextile shall be exposed along edges or under riprap. Contractor shall place granular filter and riprap so geotextile is not damaged.

D. Place riprap, granular filter, and riprap underlayment (geotextile) in accordance with Mn/DOT Standard Specifications 2511 and 3601.

E. See Section 31 05 19.13, Geotextiles for Earthwork for additional geotextile requirements.

END OF SECTION 31 37 00

Division 32

Exterior Improvements

SECTION 32 10 00

BASES AND PAVEMENTS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete pavement at the site including, but not limited to:

1. Gravel pavement

2. Bituminous pavement

B. Related Sections

1. Section 31 23 00 Excavation and Fill

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise.

1. American Society for Testing and Materials (ASTM)

a. ASTM D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Test results and certificates including:

1. Prior to placement, submit signed certification that materials furnished and mixture designs to be used for this Work have been tested and conform to the applicable requirements of these Specifications.

a. Indicate source of materials, mixture designations and proportions, name and address of testing laboratory, and dates of tests.

1.04 QUALITY CONTROL

A. Perform source quality control and field quality control as specified in Section 01 45 00, Quality Control.

1.05 SEQUENCING AND SCHEDULING

A. Do not proceed with paving activities until testing of subgrade materials and/or observation of subgrade preparation has been completed by Engineer or Owner.

B. Do not proceed with paving activities until grading of subgrade material has been completed in accordance with Section 31 23 00, Excavation and Fill. Touch up or regrade as necessary to provide surface free of ruts, rills, depressions, and other undesirable features.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Only materials meeting requirements of Specifications at time of placement (temperature, etc.) will be accepted.

B. Immediately remove from Site all materials not meeting requirements.

C. Store materials and stage equipment within construction limits and staging.

D. Do not block access to buildings with delivery of materials and equipment staging.

1.07 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 AGGREGATE BASE (GRAVEL)

A. 100% crushed quarry rock (limestone or dolostone) Class 5 as specified in Mn/DOT Standard Specifications 3138.

2.02 GRAVEL (SURFACING)

A. Gravel (Surfacing) material shall be equivalent to Aggregate Base (Gravel) material.

2.03 BITUMINOUS PAVEMENT

A. Bituminous Base Course:

1. Transfer Station Access Road

    a. Shall conform to the requirements of Mn/DOT Standard Specification 2360 for Plant Mixed Asphalt Pavement, Type SPNWB440B, or an owner-approved equal.

2. Site Access Road

    a. Shall conform to the requirements of Mn/DOT Standard Specification 2360 for Plant Mixed Asphalt Pavement, Type SPNWA240B, or an owner-approved equal.

B. Bituminous Tack Coat:

1. Shall conform to the requirements of Mn/DOT Standard Specification 2357 for Bituminous Tack Coat, Type MC250-800 and 3151 for Bituminous Material.

C. Bituminous Wear Course:

1. The use of recycled materials in bituminous mixtures for wear course will not be allowed.

2. Transfer Station Access Road

    a. Shall conform to the requirements of Mn/DOT Standard Specification 2360 for Plant Mixed Asphalt Pavement, Type SPWEB440C, or an owner-approved equal.

3. Site Access Road

    a. Shall conform to the requirements of Mn/DOT Standard Specification 2360 for Plant Mixed Asphalt Pavement, Type SPWEA240B, or an owner-approved equal.

D. Asphalt Binder Material:

1. Shall conform to the requirements of Mn/DOT Standard Specification 3151 for Performance Grade Asphalt Binder.

E. All bituminous mixtures shall incorporate an approved coating and anti-stripping additive.

PART 3: EXECUTION

3.01 SUBGRADE COMPACTION

A. See Specification 31 23 00, Excavation and Fill.

3.02 PROOF ROLLING

A. Perform proof rolling with a fully loaded tandem axle dump truck having a minimum gross weight of 25 tons. Proof rolling should be performed in the presence of Engineer or Owner. If

any soft or weak zones are identified during the proof roll, the material should be subcut a minimum of 3 feet and replaced with suitably compacted fill material.

3.03 AGGREGATE BASE

A. Place and compact Aggregate Base material to the compacted thicknesses required as on the Drawings. Compact to minimum 100% of standard Proctor maximum dry density (ASTM D698) and within +/- 2% of optimum moisture content.

3.04 GRAVEL SURFACING

A. Place and compact Gravel Surfacing material to the compacted thicknesses required as on the Drawings. Compact to minimum 100% of standard Proctor maximum dry density (ASTM D698) and within +/- 2% of optimum moisture content.

3.05 BITUMINOUS PAVEMENT

A. Install bituminous pavement in accordance with MN/DOT Standard Specification 2360 and to the compacted thickness in lifts as shown on the Drawings.

B. Non-wearing course:

1. Place within 72 hours of completion of Aggregate Base course.

2. Prior to base course paving, tack material shall be applied to existing construction joints adjoining to new base course mat. Tack coat shall be applied at an application rate of 0.05 gallons per square yard.

3. Verify that all structures are properly plated with a metal plate prior to paving.

4. Prior to paving areas with previously installed utilities, verify that those utilities were not damaged during construction.

C. Wearing course:

1. Prior to paving, base surface must be cleaned and tack material applied.

2. Prior to paving, adjust castings and remove a diamond cut with a minimum of 2 feet (0.6m) of bituminous base course around any structure to allow approved mechanical recompaction of aggregate base. Recompaction of aggregate base shall be accomplished with a Wacker J-Tamper or approved equal (vibratory pads are not allowed). Refill and compact resulting gap with bituminous to level of surrounding course prior to paving the next course. Tack or reheat all edges prior to patching.

3. Paving wear course before June 1 or after October 15 requires (written) permission from the Engineer. Confirmation shall be in written form.

4. Tack Coat: Excess fuel oil or similar substances should be removed from any surface after the tack coat has been applied. Tack coat shall be applied as close as possible to paving time. Tack coat shall be reapplied at the discretion of the Engineer. Tack coat shall be applied at an application rate of 0.05 gallons per square yard.

5. Pneumatic roller for finishing wear course is required except as may be prohibited by Engineer adjacent underground structures.

6. Construction joints: the contact surface of all fixed structures shall be tacked prior to paving. The edge of any cold in-place pavement shall also be tacked prior to paving.

3.06 TOLERANCES

A. Line and grade (+/– 0.2 foot horizontally, +/– 0.05 feet vertically)

END OF SECTION 32 10 00

SECTION 32 31 00

FENCES AND GATES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor for:

1. Chain link fencing,
2. Swing gate for walk-through access,
3. Double swing gate for vehicle access,
4. Swing arm gate for vehicle access,
5. Split rail fence, and
6. Temporary chain link fencing.

1.02 REFERENCES

A. The following are complete titles of references cited in this Section:

1. American Association of State Highway and Transportation Officials (AASHTO)
    a. AASHTO M232: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
2. American Society for Testing and Materials (ASTM)
    a. ASTM F900: Standard Specification for Industrial and Commercial Steel Swing Gates
3. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Submit temporary fencing plan for approval. Plan shall include proposed temporary fencing, proposed location of temporary fencing, and proposed schedule of temporary and final fencing.

B. Manufacturer's Information: Submit manufacturer's data and installation instructions for all pre-fabricated products.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance, for a minimum of 10 projects within the last 2 years.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Care shall be utilized throughout the delivery, storage and handling to not scratch, bend, warp or otherwise damage the components.

B. All components shall be stored above ground on level timbers or other material that will not stain, corrode, scratch or otherwise damage the components.

1.06 SEQUENCING AND SCHEDULING

A. Maintain security around Transfer Station, provide temporary fencing until final fencing is installed.

1.07 PERFORMANCE REQUIREMENTS

A. Vehicle Access Gate Structural Performance: Provide gate systems to withstand gate dead loads and wind live loads to a minimum of 75 mph.

1.08 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 CHAIN LINK FENCE

A. Fabric: 9-gage galvanized steel wire, 2-inch mesh, knuckle selvage top and bottom, conforming to Mn/DOT 3376.2

B. Top Rail: 1 5/8" O.D.

C. Line Posts: 1 7/8" O.D.

D. Terminal, Corner or Gate Posts: 2 3/8" O.D.

E. Post Caps: Dome Style, AASHTO M232.

F. Truss Rods: 3/8" galvanized steel.

G. Tension Wire: 7-gage galvanized.

H. Ties: 9-gage aluminum.

2.02 SWING GATES (WALK-THROUGH OR VEHICLE ACCESS)

A. Fabricate in accordance with ASTM F900.

B. Size and location as shown on Drawings.

C. Fabric: same as Paragraph 2.01.

D. Hinges: galvanized steel, non-lift type to allow gate swing 180-degrees.

E. Latch: galvanized steel, forked type to allow operation from either side of gate, and provision for padlock.

F. Drop rod (for double gates): galvanized drop rod with center gate stop pipe or receiver.

2.03 TEMPORARY CHAIN LINK FENCE

A. Height: 6' minimum

B. Fabric: 9-gage galvanized steel wire, 2-inch mesh,

C. Rails: 1 1/4" O.D. with horizontal and vertical braces

2.04 SPLIT RAIL FENCE

A. Split rail fence materials shall be Western Red Cedar, or an owner-approved equal.

2.05 CONCRETE

A. Portland cement, 28-day compressive strength of 3,000 psi.

PART 3: EXECUTION

3.01 ERECTION

A. General: All metal components shall be erected in a neat workmanship-like manner. All components shall be plumb, horizontal at the designated slope, and square, as appropriate. All components shall be installed in full conformance with manufacturer's written instructions.

B. Fence posts shall be spaced according to manufacturer's recommendation, plus or minus ½-inch. For installation that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade.

C. Fence panels shall be attached to posts with brackets supplied by the manufacturer.

D. Gate posts shall be spaced according to the manufacturer' recommendation and Drawings. Gate hardware shall be provided by the manufacture of the gate and shall be installed per manufacturer's recommendations.

E. Posts shall be set in concrete footers and shall comply with the Drawings.

F. When cutting/drilling rails, posts, or panels adhere to the following steps to seal exposed steel surfaces:

1. Remove all metal shavings from cut area.

2. Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole, let dry.

3. Failure to seal exposed surfaces per step 1-2 above may result in negation of fence warranties.

3.02 FIELD CONTROL QUALITY

A. Establish and maintain quality control for work under this section to assure compliance with contract requirements and maintain records of his quality control for all construction operations. In addition, coordinate, verify, and check the operations which directly affect placement of the fence and gates.

END OF SECTION 32 31 00

SECTION 32 92 00

TURFS AND GRASSES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes restoring all disturbed areas, and includes soil preparation, seeding, erosion control blanket and all other work as may be necessary including, but not limited to:

1. Placing topsoil for seeding.

2. Restoring all areas disturbed.

3. Furnishing and Installing wetland seed mix, upland buffer seed mix, general seed mix, and cover crop seed mix.

4. Mulching and fertilizing.

5. Placing erosion control blankets.

6. Establishing and maintaining seeding.

B. Related Sections

1. Section 01 45 00 Quality Control

2. Section 31 23 00 Excavation and Fill

3. Section 31 25 00 Erosion and Sedimentation Control

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. Minnesota Board of Water and Soil Resources (BWSR) Native Vegetation Establishment and Enhancement Guidelines (October 2014).

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Submit for information all requested submittals a minimum of two weeks prior to the Work, except as noted.

B. Installation Supervisor resume of qualifications.

C. Seeding Plan/Schedule

1. Contractor shall submit a seeding plan/schedule for approval by the Owner and/or Engineer. This plan shall include proposed methods of seeding and proposed surface preparation and equipment.

D. Submit for review soil testing analyses per Section 01 45 00, Quality Control.

E. Test results and certificates:

1. Seed mixture guarantee that the mixture and ratios meets the specified percentage or weight in the Seed and Plant Lists.

2. Seed testing indicating an 80% or higher viability prior to final payout.

1.04 QUALIFICATIONS

A. Foreman qualifications:

1. Minimum of five years of experience in landscape installation and restoration.

2. Horticultural or ecological restoration training.

3. Able to take direction from and communicate with Engineer in spoken English.

B. Crew qualifications:

1. Familiar with planting procedures.

2. Under the supervision of a qualified foreman.

1.05 QUALITY ASSURANCE

A. Inspection: The Owner reserves the right to inspect all seeds at their place of growth and upon delivery for conformity to specification requirements. Approval of material at those times does not preclude the right of inspection and rejection during progress of the planting work.

B. Seed analysis shall be attached to the seed bags showing species, germination, purity, name of certified testing agency, and date of test. No seed will be accepted unless test date is within 12 months of planting date.

C. Communication between Contractor and Owner:

1. Notify Engineer or Owner at least (3) three days in advance of any Work to be performed at Site, or of any inspections necessary to conform to Specifications.

1.06 DELIVERY, STORAGE, HANDLING

A. Furnish standard products in unopened manufacturer's containers.

B. Ship and store seed and mulch with protection from weather or other conditions that would damage the product or impair it effectiveness. Contractor shall inspect materials and items that have become wet, moldy, or otherwise damaged in transit or in storage shall be rejected.

C. The Engineer or Owner will inspect all seeds. Items which have become wet, moldy, or are otherwise damaged will be rejected.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate fill and topsoil replacement with waste removal work and other project activities.

B. Coordinate the planting work with site grading work and any other restoration work, with the goal of minimizing lag time between completion of grading and restoration work.

C. Contact the local utility companies for verification of the location of all underground utility lines in the area of work.

D. Turf establishment shall conform to the planting Season of Planting requirements of Mn/DOT Standard Specification 2575.3 A.

E. Contractor shall plant seed during non-frozen dormant seasons or growing seasons.

1. Dormant seeding shall conform to MN/DOT Standard Specifications 2575.3 B.7 as approved by Engineer. Snow seeding is not allowed.

F. Notify Owner and/or Engineer when planting operations and site monitoring visits will occur, a minimum of three (3) days in advance.

1.08 SUBSTITUTIONS

A. Species to be planted shall be as specified. For any proposed substitutions Contractor shall submit written application and comply with requirements of the Agreement.

B. If acceptable proof is submitted to the Engineer and Owner, that any seed or plant specified is not obtainable, due to conditions beyond the control of Contractor and for reasons other than cost changes since submittal of Contractor's Bid, a proposal will be considered for use of the nearest equivalent species with an appropriate adjustment of the unit price.

1.09 EROSION CONTROL

A. Contractor is required to continue erosion control methods and maintain previously installed materials, and to install, where necessary, additional protection to control erosion and sedimentation during their work on the site.

B. Verify that conditions on the Site are suitable to receive work prior to commencing.

C. Contractor will be responsible to repair all subsequent soil erosion after site condition verification extending for a period of three months after receipt of preliminary acceptance.

D. Repair all erosion rills greater than one inch deep. Repair all eroded areas within 48 hours of receipt of notification from Engineer or Owner. Additional erosion control repairs and/or measures shall be considered incidental to the plant installation.

1.10 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 SOIL

A. Common Fill

1. See Section 32 23 00, Excavation and Fill for Common Fill requirements.

B. Topsoil

1. See Section 32 23 00, Excavation and Fill for Topsoil requirements.

2.02 FERTILIZER:

1. Fertilizer shall be as specified in Mn/DOT Standard Specification 3881.

2. Contain minimum percentage by weight of: 10-10-10: Nitrogen, Phosphorus, Potash.

a. Adjust, if necessary, per the outcome of topsoil analysis.

2.03 AGRICULTURAL LIME

A. Provide Agricultural Lime if required for pH adjustment per outcome of topsoil analysis

B. Agricultural Lime (if required for pH adjustment per outcome of topsoil analysis) shall be as specified in Mn/DOT Standard Specification 3879.

2.04 SEED MIXES

A. General Seed Mix

1. General Seed Mix shall be State Seed Mix 35-241 as specified in Mn/DOT Standard Specification 3876.

B. Native General Seed Mix

1. Native General Seed Mix shall meet the following requirements:

Common Name	Scientific Name	Rate (lb/ac)	Rate (Seeds/ square foot)	Mix (% by weight)	Mix (% by seeds)
Side-oats grama	*Bouteloua curtipendula*	2.88	6.35	7.90	4.78
Blue grama	*Bouteloua gracilis*	2.19	32.18	6.00	24.23
Poverty oatgrass	*Danthonia spicata*	1.10	10.06	3.00	7.57
Canada wild rye	*Elymus canadensis*	0.73	1.39	2.00	1.05
Revenue slender wheatgrass	*Elymus trachycaulum*	1.46	5.33	4.00	4.01
Junegrass	*Koeleria macrantha*	0.18	13.41	0.50	10.09
Lodorm Westerm wheatgrass	*Pascopyrum smithii*	1.10	2.34	3.00	1.76
Sand dropseed	*Sporobolus cryptandrus*	0.37	26.81	1.00	20.19
	Total Grasses	**10.0**	**97.9**	**27.4**	**73.7**
Yarrow	*Achillea millefolium*	0.07	4.77	0.20	3.59
Lead plant	*Amorpha canescens*	0.22	1.29	0.60	0.97
Stiff tickseed	*Coreopsis palmata*	0.07	0.27	0.20	0.20
Common ox-eye	*Heliopsis helianthoides*	0.22	0.37	0.60	0.28
Wild bergamot	*Monarda fistulosa*	0.04	1.03	0.11	0.78
Yellow coneflower	*Ratibida pinnata*	0.15	1.61	0.40	1.21
Black-eyed Susan	*Rudbeckia hirta*	0.37	12.33	1.00	9.29
Stiff goldenrod	*Solidago rigida*	0.18	2.75	0.50	2.07
Smooth Aster	*Symphyotrichum laeve*	0.07	1.47	0.20	1.11
Golden Alexander	*Zizia aurea*	0.11	0.44	0.30	0.33
	Total Forbs	**1.5**	**26.3**	**4.1**	**19.8**
Oats	*Avena sativa*	25.00	8.61	68.49	6.48
	Total Cover Crop	**25.0**	**8.6**	**68.5**	**6.5**
	Total	**36.5**	**132.8**	**100.0**	**100.0**

C. Cover Crop Seed Mix

1. Cover Crop Seed Mix shall be State Seed Mix 21-111 or 21-112 as specified in Mn/DOT Standard Specification 3876.

D. Wetland Seed Mix

1. Wetland Seed Mix shall be State Seed Mix 34-271 as specified in Mn/DOT Standard Specification 3876.

E. Upland Buffer Seed Mix

1. Upland Buffer Seed Mix shall be State Seed Mix 32-241 as specified in Mn/DOT Standard Specification 3876.

F. Comply with current U.S. Department of Agriculture rules and regulations.

G. Any seed substitutions required shall be coordination with Owner and Engineer.

2.05 EROSION CONTROL

A. Erosion Control Blanket

1. See Section 31 25 00, Erosion and Sedimentation Control for Erosion Control Blanket requirements.

B. Mulch

1. Provide mulch for disturbed and seeded areas that do not require Erosion Control Blanket.

2. Wetlands

a. No mulch shall be applied within the wetland

3. General Mulch

a. General Mulch shall be Type 1 Mulch as specified in Mn/DOT Standard Specification 3882.

4. Upland Buffer Mulch

a. Upland Buffer Mulch shall be Type 3 Mulch as specified in Mn/DOT Standard Specification 3882.

2.06 WATER

A. Contractor shall be responsible for water used for seed establishment.

PART 3: EXECUTION

3.01 GENERAL REQUIREMENTS

A. Cover all disturbed areas with topsoil to a minimum depth of 6 inches. Install seed, mulch, fertilize, and erosion control blanket in accordance with Mn/DOT Standard Specification 2575 and as specified herein.

B. Coordinate the vegetation establishment work with the grading and finishing operations to provide protection as soon as possible after areas have been prepared.

C. Do not begin ground preparation until rocks greater than 1 ½ - inch diameter, boulders, debris, and similar materials have been removed, depressions and ruts filled, and area to be seeded shaped, trimmed, and finished uniformly to grades and cross-sections shown on the Drawings, or to match original grade.

3.02 TOPSOIL PLACEMENT, GRADING, AND SITE PREPARATION

A. Finish Grading

1. Place topsoil uniformly over entire area to be planted to a minimum depth of 6 inches. In the event that topsoil has been disturbed or is not of acceptable depth prior to application of seed, add supplement topsoil in area to bring it up to the required depth. Work all areas receiving seed until the soil is completely fined and in a mellow condition, and to a smooth, even finish grade. Fill all holes, depressions and rivulets to ensure no disruption of established drainage patterns. Remove all rubble, sticks, branches, or stones and extraneous material over ¾-inch diameter on the surface, which will interfere with the seeding.

2. Immediately prior to seeding, loosen topsoil to a depth of 3 inches on all areas using discs, harrows, tiller rakes, or hand tools as needed to produce fine grade and incorporate the compost into the soil.

3. Prepare ground so top of newly seeded areas will be flush with adjacent soil, adjacent walks, and permanent surfacing.

B. pH Adjustment:

1. Adjust topsoil pH per the requirements/outcomes of topsoil analysis and in accordance with Mn/DOT Standard Specification Section 3879.

C. Fertilizer Spreading:

1. No fertilizer shall be applied within the wetland or upland buffer areas.

2. Mechanically spread uniformly in two passes at right angles to each other.

3. 20 lbs. of active ingredients/10,000 sq. ft. (90 lbs. /acre) unless required otherwise by topsoil analysis.

4. Disk, harrow or rototill fertilizer into soil to depth of three (3) inches, or use other acceptable method to produce similar results.

D. Cleanup:

1. Remove and dispose of rock, trash or other materials brought to surface to off-site area in legal manner and per these Specifications.

3.03 SEEDING

A. Planting Seasons for Seeded Areas:

1. Planting seasons shall be as specified in Mn/DOT Standard Specification 2575.

B. Seed Application:

1. Seed areas with respective seed mix as designated on the Drawings.

2. Immediately prior to seed installation the site shall be inspected for adequate installation conditions including the complete eradication of any weeds that may be present.

3. Do not seed on saturated or frozen soil.

4. Perform seeding at a right angle to surface drainage.

5. Seed all areas disturbed by construction operations including temporary slopes.

6. Do not seed following rain or if surface has been compacted by rain.

7. Do not seed when wind velocity exceeds six (6) mph.

8. Hand seeded areas must be hand raked to ensure good seed-to-soil contact. Hydroseeding is not to be used for any seed mixture.

9. Wetland Seeding Areas:

a. Seeding will take place using a broadcast drop seeder designed for use with native seed mixes. Seeding equipment shall be checked at the end of each seeding pass to ensure even distribution of seed through each pass.

b. Within 12 hours, if conditions permit or as soon thereafter as practical, all seeded areas shall be rolled at right angles to the line of run-off with a roller or cultipacker to compact the seedbed to place the seed in contact with the soil.

10. General, Upland Buffer, and Cover Crop Seeding Areas

a. Seeding shall be sown using a seed drill or drop type seeder. Seed shall be installed in rows no greater than 8-inch apart.

b. Immediately prior to seeding operations, all seeding equipment shall be calibrated and adjusted to sow seeds at the proper seeding rate. The drill shall be calibrated at 1/2 the appropriate seeding rate and each area shall be drilled twice at opposite directions to help insure an even distribution. Seed shall be sown at approximately 1/8-inch to 1/4-inch deep and no deeper than 1/2-inch deep.

3.04 EROSION CONTROL BLANKET

A. Use erosion control blanket on all seeded areas with slopes greater than 4:1 and as designated on the Drawings or by the Engineer following seeding operations.

B. Install erosion control blanket in all areas as shown on Drawings in accordance with Mn/DOT Standard Specification 2575.3. Install blankets vertically on the slope. Use a minimum two inch overlap, where more than one width is required. Secure the outer most stitch of each blanket with a common row of staples. Trench blanket at the head of the slope if the blanket cannot be extended three feet over the slope crest or if overland flow is anticipated from upslope areas.

C. Take precautions to prohibit pedestrian or vehicular traffic over the blanketed area. Replace at once, blanket displaced by such activities, but only after the work preceding the blanketing, which may have been damaged as a result of the displacement, has been acceptably repaired. Suspend or alter blanketing activities, as directed by Engineer, when soil conditions are excessively wet or dry.

3.05 MULCH

A. No mulch shall be applied within the wetland.

B. Install mulch on all seeded areas (other than wetlands) following seeding operations.

1. Mulch in accordance with Mn/DOT Standard Specification 2575 with the following exception:

a. Type 1 mulch shall be anchored with straw and mulch crimper immediately after application.

b. Type 1 mulch shall be applied at a rate of 3,000 lbs per acre.

2. On slopes, disc anchoring shall be at right angles to slope.

3. Install erosion control blanket in all areas where disc anchoring cannot be performed.

3.06 CLEAN-UP

A. Daily: Keep Work areas clean, neat, and orderly.

B. Final: Clean-up the entire area around planting operations and restore to its original condition.

C. Restore existing turf damaged by Contractor's planting operations by seeding.

3.07 MAINTENANCE AND ESTABLISHMENT

A. Maintain seeded area as needed until establishment and acceptance.

B. Maintenance may consist of watering, fertilization, reseeding, adding mulch and repair.

C. Repair soil, reseed, fertilize, and re-install erosion control blanket on any areas on which the original mulch or erosion control blanket has eroded, washed away, or blown off, as directed by Owner or Owner's On-Site Representative.

D. The Contractor is responsible for any supplemental watering that may be required to ensure thorough establishment of seed.

E. Protection:

1. Maintenance includes temporary protection fences and barriers, signs, and other Work incidental to proper maintenance.

2. Contractor liable for damage to seeded areas caused by fertilizers, pesticides, and other materials supplied by Contractor.

F. Reseeding and Repair:

1. Any bare, open areas greater than 10 square feet shall be reseeded at one half of the original seeding rates.

2. Bare spots shall be spot reseeded in accordance with Mn/DOT sowing and seeding specifications.

3. Reseed area in accordance with drill seeding and maintenance requirements.

3.08 ACCEPTANCE

A. Seed shall display reasonably uniform distribution of plants after any required reworking.

B. Seed shall display vigorous growth and be healthy in appearance.

C. Notify Engineer when seeded area is ready for final inspection.

D. Guarantee seeded areas for duration of one (1) year after seeding installation to be established and in satisfactory growth at end of guarantee period.

E. For purpose of establishing acceptable standard, scattered bare spots, none larger than one square foot will be allowed up to maximum of three (3) percent of seeded area.

END OF SECTION 32 92 00

Division 33

Utilities

SECTION 33 05 28

TRENCHING AND BACKFILLING FOR UTILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to excavate and backfill trenches for utilities including, but not limited to:

1. Excavating trenches for utilities.

2. Compacted fill from top of utility bedding to subgrade elevations.

3. Backfilling and compaction.

B. Related Sections

1. Section 31 01 00 Site Preparation

2. Section 31 23 00 Excavation and Fill

3. Section 33 10 00 Water Utilities

4. Section 33 30 00 Sanitary Sewer Utilities

5. Section 33 40 00 Storm Drainage Utilities

1.02 DEFINITIONS

A. *Utility* – any buried pipe, duct, conduit, or cable.

1.03 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise.

1. Occupational Safety and Health Standards-Excavations (OSHA)

a. OSHA set forth in 29 CFR 1926, Subpart P.

1.04 SUBMITTALS

A. No submittals are required from this Section.

1.05 SEQUENCING AND SCHEDULING

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities for gravity flow systems.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 FILL MATERIALS

A. See Section 31 23 00, Excavation and Fill.

PART 3: EXECUTION

3.01 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

1. Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.02 PREPARATION

A. Call Local Utility Line location service not less than 3 working days before performing Work to request underground utilities to be located and marked within and surrounding construction areas.

B. Locate private utility lines that may impact the Work.

C. Prepare the site in accordance with Section 31 01 00, Site Preparation.

3.03 TRENCHING

A. Excavate trenches sufficiently wide to enable installation and allow inspection and in accordance with OSHA requirements. Remove water or materials that interfere with Work.

B. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

C. Excavate trenches to a sufficient depth to install pipes as indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

D. Do not interfere with 45 degree bearing splay of foundations.

E. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Engineer until suitable material is encountered.

F. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.

3.04 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Design sheeting and shoring to be left in place as part of the completed Work, cut off 24 inches above top of utility.

C. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

3.05 BACKFILLING

A. Place and compact pipe bedding soil with hand-operated compaction equipment, thoroughly compacting the soil beneath the haunches of the pipe being laid.

B. Backfill trenches to contours and elevations with suitable fill materials.

C. Backfill and compact trenches as specified in Section 31 23 00, Excavation and Fill. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

D. Employ placement method that does not disturb or damage utilities in trench.

E. Protect open trench to prevent danger to Contractor's or other personnel.

3.06 FIELD QUALITY CONTROL

A. Perform field quality control as specified in Section 01 45 00, Quality Control.

B. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.07 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION 33 05 28

SECTION 33 10 00

WATER UTILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete buried water pipe and appurtenances and provide temporary sanitary service.

B. Related Sections

1. Section 33 05 28 Trenching and Backfilling for Utilities

2. Section 40 90 00 Instrumentation and Control for Process Systems

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise.

1. American Water Works Association (AWWA)/American National Standards Institute (ANSI):

a. AWWA C600: Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances

b. AWWA C651: Disinfecting Water Mains

2. City Engineers Association of Minnesota Standard Specifications, 2018 Edition, hereafter referred to as CEAM Standard Specifications

1.03 SUBMITTALS

A. Submit for approval a temporary potable water plan. Plan shall include proposed temporary piping, proposed location of temporary piping, and proposed schedule of temporary and final piping.

B. Manufacturer's product data including:

1. Technical product data and installation instructions for all water system materials and products.

C. Shop drawings including:

1. Piping materials, size, locations, and elevations. Include details of underground structures, valves, connections, restrained joints, and anchors. Show interface and spatial relationship between piping and proximate structures.

D. Test results and certificates including:

1. Hydrostatic Test. Submit for approval 1 copy of results of hydrostatic test upon completion of water distribution backfilling operations.

2. Electrical Conductivity Test. Submit for approval 1 copy of results of electrical conductivity test upon completion of water distribution backfilling operations.

3. Bacteriological Tests. Submit for approval 1 copy of results of bacteriological tests upon completion.

E. Record Drawings:

1. At Project closeout, submit for information Record Drawings of installed piping and products including locations and elevations.

1.04 QUALITY ASSURANCE

A. Manufacturer's Qualifications. Firms regularly engaged in manufacture of potable water systems materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer's Qualifications. Firm with at least 3 years of successful installation experience on projects with potable water piping work similar to that required for project

1.05 SEQUENCING AND SCHEDULING

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities for gravity flow systems.

B. Maintain potable water service to Transfer Station during and after construction activities.

C. Provide temporary water service prior to removing or shutting down the existing potable waterline.

D. Temporary water service shall be tested to ensure it is potable prior to use.

E. Sequence work such that temporary water service is not subject to freezing conditions.

F. During construction work on the water system, the contractor will contact the Owner at least 72 hours in advance to request and schedule the Transfer Station water system shut off.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Contractor to comply with installation requirements.

2.02 IDENTIFICATION

A. Underground-Type Plastic Line Markers. Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6 inches wide by 4 mils thick. Provide blue tape with black printing reading "CAUTION WATER LINE BURIED BELOW."

2.03 PIPING AND FITTINGS

A. Ductile iron pipe, fittings, joints, and restraining devices to meet the requirements of AWWA C600 and CEAM Standard Specification 2611.2, with pipe and fitting for ductile iron pipe, Class 52.

B. Accessories: See Section 40 90 00, Instrumentation and Control for Process Systems for heat trace requirements.

PART 3: EXECUTION

3.01 GENERAL

A. Install buried waterline in accordance with CEAM Standard Specification 2611.3.

B. Tying into existing potable waterline is limited to 12 consecutive hours.

3.02 INSPECTION

A. Examine areas and conditions under which potable water system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.03 IDENTIFICATION

A. During backfilling of underground potable water piping, install continuous underground-type plastic line markers, located directly over buried lines at 18 inches to 24 inches below finished grade.

3.04 PIPE AND PIPE FITTINGS

A. Install ductile iron pipe waterline and fittings in accordance with AWWA C600 and CEAM Standard Specification 2611.3:

B. Provide minimum cover over piping as shown on the Drawings.

3.05 FIELD QUALITY CONTROL

A. Site Tests

1. Compaction

a. Perform inspections prior to and immediately after placing bedding.

2. Piping (general):

a. Perform Hydrostatic Testing for water pipe in accordance with Section 4 of AWWA C600 and CEAM Standard Specification 2611.3-G.

b. Owner will perform Operational Testing in accordance with CEAM Standard Specification 2611.3-H.

c. Perform Electrical Conductivity Testing in accordance with CEAM Standard Specification 2611.3-F.

d. Notify Engineer and Owner 48 hours prior to all pipe testing.

3.06 DISINFECTION

A. Disinfect potable water system with chlorine in accordance with AWWA C651 and CEAM Standard Specification 2611.3-E.

B. After disinfection, Contractor shall collect 2 consecutive days of water samples and bacteriological tests in accordance with AWWA specifications. Provide 1 copy of results of bacteriological tests to Engineer and Owner upon completion. Do not place distribution system in service until approval is obtained from Owner. The samples shall be confirmed to be free of coliform organisms prior to the waterline being put into service.

END OF SECTION 33 10 00

SECTION 33 30 00

SANITARY SEWER UTILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to complete sanitary drainage pipe and provide temporary sanitary service.

1.02 RELATED SECTIONS

A. Section 33 05 28 Trenching and Backfilling for Utilities

B. Section 40 90 00 Instrumentation and Control for Process Systems

1.03 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date.

1. American Water Works Association (AWWA)/American National Standards Institute (ANSI):

a. AWWA C600: Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances

2. City Engineers Association of Minnesota Standard Specifications, 2018 Edition, hereafter referred to as CEAM Standard Specifications

1.04 SUBMITTALS

A. Submit for approval a temporary sanitary service plan. Plan shall include proposed temporary piping, proposed location of temporary piping, and proposed schedule of temporary and final piping.

B. Manufacturer's product data including:

1. Technical product data and installation instructions for sewage system materials and products.

C. Shop drawings including:

1. Piping materials, size, locations, and inverts. Include details of underground structures, connections, and manholes. Show interface and spatial relationship between piping and proximate structures.

D. Test results and certificates including:

1. Sanitary Sewer Leakage Test. Submit for approval 1 copy of results of leakage.

E. Record Drawings:

1. At project closeout, submit for information record drawings of installed sanitary sewage piping and products including locations and elevations.

1.05 SEQUENCING AND SCHEDULING

A. Verify existing pipe material and dimensions prior to any Work associated with the sanitary service.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities for gravity flow systems.

C. Maintain sanitary service to Transfer Station during and after construction activities.

D. Provide temporary sanitary service prior to removing or shutting down the existing sanitary system.

E. Temporary sanitary service shall be tested prior to use.

F. Sequence work such that temporary sanitary service is not subject to freezing conditions.

G. During construction work on the water system, the contractor will contact the Owner at least 72 hours in advance to request and schedule the Transfer Station water system shut off.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated on the Drawings. Where not indicated, provide proper selection as determined by Contractor to comply with installation requirements. Provide sizes and types matching piping; provide fittings of materials which match pipe materials used in sanitary sewer

systems. Where more than one type of materials or products is indicated, selection is Contractor's option.

2.02 IDENTIFICATION

A. Underground-Type Plastic Line Marker: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide green tape with black printing reading "CAUTION SEWER LINE BURIED BELOW."

2.03 PIPING AND FITTINGS

A. Provide pipes of weight/class indicated on the Drawings. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

B. Ductile iron pipe, fittings, joints, and restraining devices to meet the requirements of AWWA C600 and CEAM Standard Specification 2621.2, with pipe and fitting for ductile iron pipe, Class 52.

C. Accessories: See Section 40 90 00, Instrumentation and Control for Process Systems for heat trace requirements.

2.04 TRACER WIRE

1. Tracer Wire to meet the requirements of CEAM Standard Specification 2621.2-A12.

PART 3: EXECUTION

3.01 INSPECTION

A. Examine areas and conditions under which sanitary sewer system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 IDENTIFICATION

A. During backfilling of underground piping, install continuous underground-type plastic line markers, located directly over buried lines at 18 inches to 24 inches below finished grade.

3.03 PIPE AND PIPE FITTINGS

A. Install ductile iron pipe waterline and fittings in accordance with AWWA C600 and CEAM Standard Specification 2621.3:

B. Provide minimum cover over piping as shown on the Drawings.

3.04 TRACER WIRE

1. Install Tracer Wire in accordance with CEAM Standard Specification 2621.3-A5.

3.05 FIELD QUALITY CONTROL

A. Perform testing of completed piping in accordance with local authorities having jurisdiction. All pipes shall be backfilled and cleaned by flushing with water prior to testing. A high velocity jet or other methods may be necessary.

1. Perform Sanitary Sewer Leakage Test in accordance with CEAM Standard Specification 2621.3-E.2b.

2. Notify Engineering and Owner 48 hours prior to all pipe testing.

B. Pipe and pipe appurtenances installation will be subject to rejection for any of the following reasons.

1. Failure to conform to the Specifications, with regard to:

a. Compaction under and around the pipe

b. Line and grade (+ or – 0.5 foot horizontally, + or – 0.10 feet vertically)

2. Damaged ends where such damage would prevent making a satisfactory joint

3. Damaged gasketed coupler system

END OF SECTION 33 30 00

SECTION 33 40 00

STORM DRAINAGE UTILITIES

PART 1: GENERAL

1.01 SUMMARY

A. Section includes providing all materials, equipment, and labor to install storm sewer utilities.

B. Related Sections

1. Section 31 05 19.13 Geotextiles for Earthwork

2. Section 31 23 00 Excavation and Fill

3. Section 31 37 00 Riprap

4. Section 33 05 28 Trenching and Backfilling for Utilities

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. American Society for Testing and Materials (ASTM)

a. ASTM C361: Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.

2. Minnesota Department of Transportation Standard Specifications for Construction, 2020 Edition, hereafter referred to as Mn/DOT Standard Specifications.

1.03 SUBMITTALS

A. Manufacturer's product data including:

1. Technical product data and installation instructions for storm drainage system materials and products.

B. Shop drawings including:

1. Piping materials, size, locations, and inverts. Include details of underground structures, connections, and cleanouts. Show interface and spatial relationship between piping and proximate structures.

C. Record Drawings:

1. At project closeout, submit for information record drawings of installed storm drainage piping and products including locations and elevations.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Pipe materials shall not be stacked. Each pipe section shall be blocked to prevent rolling. Pipe ends shall be covered to prevent entry of foreign materials.

1.05 SEQUENCING AND SCHEDULING

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities for gravity flow systems.

1.06 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 GENERAL

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Contractor to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in storm drainage systems. Where more than one type of materials or products is indicated, selection is Contractor's option.

2.02 PIPING AND FITTINGS

A. Reinforced Concrete

1. Reinforced Concrete Pipe (RCP), fittings and specials shall meet the requirements of Mn/DOT Standard Specification 3236. Joints shall meet the requirements of ASTM C361.

2.03 PIPE BEDDING (IMPORTED)

A. See Section 31 23 00, Excavation and Fill for pipe bedding material requirements.

2.04 RIPRAP (IMPORTED)

A. See Section 31 37 00, Riprap for Riprap requirements.

B. See Section 31 05 19.13, Geotextile for Earthwork for Riprap underlayment (geotextile) requirements.

PART 3: EXECUTION

3.01 INSPECTION

A. Examine areas and conditions under which storm drainage system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 EXCAVATION, PIPE BEDDING, UTILITY BACKFILL AND COMPACTION

A. See Section 31 23 00, Excavation and Fill and Section 33 05 28, Trenching and Backfilling for Utilities for excavation, pipe bedding, utility backfill, and compaction requirements.

3.03 LOCATION OF WORK

A. The Work shall be located as shown on the Drawings.

B. It may be necessary for Engineer to shift lines a reasonable amount to avoid an obstruction to the construction work or to reduce difficulties. Contractor will not be allowed any additional compensation due to minor shift of lines. Additional compensation will be allowed only for lengthening of lines, or for providing additional fittings.

3.04 PIPE AND PIPE FITTINGS

A. Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.

B. Install piping and utility structures at the locations, lines, and grades as shown on the Drawings.

C. Lay piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert.

D. Before being lowered into laying position, Contractor shall make a thorough visual inspection of each pipe section and appurtenant units to detect damage or unsound conditions that may need corrective action or be cause for rejection. Contractor shall inform Engineer of any defects discovered.

E. Immediately before placement, the joint surfaces of each pipe section and fitting shall be inspected for the presence of foreign matter, coating blisters, rough edges or projections, and any imperfections so detected shall be corrected by cleaning, trimming, or repair as needed.

F. At the time of pipe placement, the bedding conditions shall be such as to provide uniform and continuous support of the pipe between bell holes. Bell holes shall be excavated as necessary to make the joint connections, but they shall be no larger than would be adequate. No pipe material shall be laid in water nor when the trench or bedding conditions are otherwise unsuitable or improper. Unless otherwise permitted by Engineer, bell and spigot pipe shall be laid with the bell ends facing upgrade and the laying shall start at the downgrade end and proceed upgrade.

G. All gravity pipe shall be laid using laser beam control. Contractor shall provide and use a suitable grade rod to insure the proper grade of the pipe.

H. Any defective or damaged pipe, or gravity pipe which has had its grade or joint disturbed after laying, shall be replaced.

I. Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.

J. Plastic Pipe: Install in accordance with manufacturer's installation recommendations, and in accordance with ASTM D2321.

K. Joint Adapters: Make joints between different types of pipe with standard manufactured adapters and fittings intended for that purpose.

3.05 RIPRAP

A. See Section 31 37 00, Riprap for Riprap requirements.

B. See Section 31 05 19.13, Geotextile for Earthwork for Riprap underlayment (geotextile) requirements.

3.06 FIELD QUALITY CONTROL

A. Establish and maintain quality control for work under this Section to assure compliance with contract requirements and maintain records of his quality control for all construction operations.

B. Compaction

1. Perform inspections prior to and immediately after placing bedding.

C. Pipe and pipe installations will be subject to rejection for any of the following reasons:

1. Failure to conform to the Specifications, particularly compaction under and around the pipe.

2. Fractures or cracks passing through pipe wall.

3. Chips or fractures on interior of pipes.

4. Cracks which, in the opinion of Owner's On-Site Representative, may impair strength, durability, or serviceability of pipe.

5. Defects indicating improper proportioning, mixing, or molding.

6. Damaged ends where such damage would prevent making a satisfactory joint.

7. Observable visual damage to any components involved in construction of the leachate management system.

D. Precast structures

1. Cracks which, in the opinion of Owner or Owner's On-site Representative, may impair strength, durability, or serviceability of the structure.

2. Failure to conform to specifications, or related contract documents.

E. Pipe and pipe appurtenances installation will be subject to rejection for any of the following reasons.

1. Failure to conform to the Specifications, with regard to:

a. Compaction under and around the pipe.

b. Line and grade (+ or – 0.5 foot horizontally, + or – 0.10 feet vertically)

2. Damaged ends where such damage would prevent making a satisfactory joint.

a. Damaged gasketed coupler system.

3.07 CLEANING

A. All storm drainage utility piping and structures shall be cleaned of accumulations of silt, debris, or foreign matter, and be free from such accumulations at the time of final inspection.

END OF SECTION 33 40 00

Division 40

Process Interconnections

SECTION 40 90 00

INSTRUMENTATION AND CONTROL FOR PROCESS SYSTEMS

PART 1: GENERAL

1.01 SUMMARY

A. Section includes heat tracing and associated control system.

1.02 REFERENCES

A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise:

1. National Fire Protection Association (NFPA)

a. NFPA 70 - National Electrical Code (NEC), latest edition

2. National Electrical Manufacturers Association (NEMA)

a. NEMA ICS-2 - Industrial Control Devices, Controllers, and Assemblies

b. NEMA 250 - Enclosures for Electrical Equipment

3. Underwriters Laboratories (UL)

a. UL 508 - Industrial Control Equipment

b. UL 698A - Industrial Control Panels for Hazardous Locations

c. UL 913 - Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II and III, Division 1, Hazardous Locations

1.03 BASIS OF BID

A. All Work and materials specified under this Section shall be provided by one of the following offering products and services in full conformance with this specification:

1. Automatic Systems Company – St. Paul, MN

2. In Control, Inc. – Blaine, MN

3. Telemetry and Process Controls, Inc. – Oakdale, MN

4. Alternate provider in accordance with these specifications and the bid form.

5. The proposed company providing instrumentation and controls from the above list shall be indicated on the Bid Form in the space provided. Failure to provide such indication may disqualify the Bid.

1.04 GENERAL

A. It is the intent of the Contract Documents that all equipment specified in this Section of the specification be supplied by a single-source supplier ("Controls Supplier") except as specifically indicated. Contractor, along with the Controls Supplier, shall assume full responsibility for furnishing, installing and start-up procedures so as to make the system operate per the intent of the Contract Documents.

B. The work specified in this Section includes furnishing, installing, start-up, testing and adjusting of all required equipment, including instruments, equipment, hardware, software, wiring, accessory equipment, and training to provide a completely operational process instrumentation and control system.

C. It shall be the responsibility of Contractor (along with the Controls Supplier) to furnish a complete and fully operating system. Contractor shall be responsible for all details that may be necessary to properly install, adjust and place in operation the complete installation. Contractor shall assume full responsibility for additional costs which may result from unauthorized deviations from the Contract Documents.

1.05 SUBMITTALS

A. Technical data in Adobe PDF form including:

1. Data sheets for all equipment and components indicated on the Drawings and specified in Part 2 of this Section.

B. Shop Drawings in Adobe PDF form including:

1. Panel drawings including system schematic drawings, terminal numbering, wire numbering, component schematic drawings, dimension drawings, layout drawing and nameplate schedule.

2. Overall system diagram showing all components, converters, cables, and connectors.

3. Proposed report formats written specific to the project.

4. Provide modifications as requested by the Engineer.

C. Operation and Maintenance data in Adobe PDF form including:

1. Panel equipment, field devices and instruments, including "as-built" system schematics.

2. CD-ROMs or other electronic format acceptable to owner containing final system record drawings, wiring diagrams and panel details. The drawing files shall be in AutoCAD format (.DWG files).

3. Include original manufacturer's manuals for all products provided in the panel.

D. Start-up report from systems supplier.

E. Spare Equipment Lists - Provide a list of recommended spare parts and equipment that is considered crucial to the operation of the system. Include list of prices for each item.

F. All submittals shall be bound in 3-ring binders with labeled tabs separating sections.

1.06 QUALITY ASSURANCE

A. The instrumentation and control system Supplier (or "Controls Supplier"), as a business entity, shall have a minimum of 5 years of experience in the assembly, installation, repair, and maintenance of municipal and industrial wastewater control systems. Substitution of individual experience in lieu of the required business experience shall not be allowed.

B. The Controls Supplier shall maintain a minimum $1,000,000 product liability insurance policy.

C. The Control Supplier must maintain and operate a panel shop with both UL-508 and UL-698A labels.

D. The Control Supplier shall have at least 5 references who are owners of successful Allen Bradley based PLC control panels provided by the Controls Supplier. In addition they shall have provided at least five (5) successful systems of similar or larger complexity in the State of Minnesota or contiguous states in the last three (3) years.

E. The Supplier shall modify or supplement the Supplier's "standard products" to meet these specifications. Standard products of a particular Supplier that do not meet the functional and technical requirements of the specification are not acceptable.

F. The Supplier shall have a minimum of two (2) full-time qualified, trained service personnel on staff who are capable of maintaining, adjusting, troubleshooting, and programming the system furnished under this contract.

G. Supplier shall have a staffed service office within 50 miles of the project site. The office shall have full-time service personnel.

H. The Supplier shall be capable of offering an extended service contract after completion of the warranty period, including 24 hour, 7-day per week emergency services.

I. Supplier shall design, engineer, assemble, program, test, and support the system using its own facilities and employees.

J. Supplier shall produce all project drawings using computer-aided drafting.

K. Included with Contractor's Bid, the supplier shall submit:

1. A description of company organization, listing types and numbers of engineers, other engineers, technicians, and other technical employees, production staff and plant production capabilities and current lead-times.

2. List of five (5) projects referenced above, including customer's name, customer contact person, engineering contact person, and phone numbers. Include a description of the project hardware, software, and cost.

3. Description of service capabilities, including number of personnel, resumes, dates of hire, prior experience, their location, and types of service contract available.

4. Provide a summary of current on-going work. Indicate which projects are bonded and the remaining amounts of bond authorization.

5. One complete copy of an Operation and Maintenance Manual for a similar project completed in the last two years.

6. Detailed list of all deviations to these Specifications including component manufacturer equipment model numbers and accompanying product information.

1.07 TESTING AGENCY CERTIFICATION

A. All new panels and subpanels furnished under this Section shall be constructed in accordance with Underwriter's Laboratories (UL) Standard 508 - "Industrial Control Equipment", and applicable portions of UL Standard 698A - "Industrial Control Panels for Hazardous Locations" and UL Standard 913 - "Intrinsically-Safe Apparatus and Associated Apparatus for use in Class I, II and III, Division 1, Hazardous Locations".

B. Each panel and subpanel shall be shop-inspected by UL or constructed in a UL-recognized facility. Each completed panel shall bear a serialized UL label indicating acceptance under Standards 508, 698A and 913.

1.08 BASIS FOR COMPENSATION

A. Compensation for all Work included under this Section shall be as set forth in Section 01 29 00, Measurement and Payment.

PART 2: PRODUCTS

2.01 CONTROL PANEL FABRICATION - GENERAL

A. Label components per shop drawings.

1. Engraved labels attached with screws.

B. All wiring terminated on barrier-type terminal strips. Terminal strips shall be labeled with engraved plastic labels.

1. Labels shall be attached with two-part epoxy adhesive.

2. 600 volt terminal strips.

3. Ring or spade type crimp connectors.

4. Wiring laced using plastic wire ties and plastic wiring troughs.

5. Wiring held down with straps attached to enclosure with screws.

6. Separate power, control and signal conductors.

7. Power wiring: #14 AWG, stranded, 600V copper minimum.

8. Control wiring: #18 AWG, stranded, 600V copper minimum.

9. Signal wiring: shielded, 300V, copper minimum. See Section 16100.

10. Provide 15 amp, 10000 AIC breaker on power circuits using #14 wire.

11. Connections to instruments via terminal strip or connectors. Soldering wires to terminal strips not acceptable.

C. Tag all wires at each end with wire number matching shop drawings.

2.02 TERMINALS

A. NEMA-style, barrier type, 0.4-inch spacing, nominal.

B. 600V RMS, 55 amp rating.

C. UL listed.

D. Allen-Bradley 1492-CA1 series, or equal.

E. Terminals for larger power circuits shall be 600 VAC barrier-type, sized for the conductors.

2.03 PIPE HEAT TRACE

A. Provide series resistant constant output heat trace for ductile iron water supply line and ductile iron sanitary sewer line as indicated on the Drawings, 12 W/ft, Raychem 2SC30-CT, or approved equal, with power connection kit, Raychem SC-JBP-S-A or approved equal, and end seal, Raychem SC-JBE-S-A or approved equal. Coordinate cable length, wattage, cold-lead length, etc. prior to ordering and installation. End seals shall be above ground. Each pipe is to be heat traced with its own single run of heat trace approximately 1100 feet long. Heat trace is to be a

continuous length of cable without any intermediate terminations. The heat trace is to be controlled by contactors controlled by an ambient sensing thermostat.

B. Provide NEMA 4X 316 SS enclosure to house power connect kits, as indicated on the Drawings.

C. Ductile iron water supply and ductile iron sanitary sewer heating system shall be controlled/protected by a heat trace thermostat with ambient temperature sensing and ground-fault protection breaker (equipment protection per NEC 426.28). The heat trace thermostat operates heat trace below a set ambient temperature, and shall be a Raychem AMC-F5 or approved equal. The ground-fault breaker shall include a 30 mA ground fault protection unit. A single ambient sensing thermostat shall be used to control two NEMA 2 contactors, one for each heat trace run.

D. Confirm heat trace will meet freeze protection requirements of final piping and backfill design and installation.

PART 3: EXECUTION

3.01 LABELING

A. Label all field mounted control devices, instrumentation, switches, etc., with tag number and item description.

B. Labels shall be engraved laminated plastic with ¼" high lettering. Labels shall be attached with stainless steel screws to the device or nearby wall.

C. Labels for all components as specified above shall also be provided for all control panel internal components.

3.02 CALIBRATION, ADJUSTING AND TESTING

A. Devices requiring field calibration shall be calibrated in the presence of Engineer's representative and documented.

3.03 PROJECT MANAGEMENT

A. Supplier shall provide engineering and administrative services necessary to fulfill the requirements of this Specification.

B. Supplier shall provide the services of an experienced project manager as the overall coordinator during the course of the project.

3.04 INSTALLATION AND START-UP

A. Supplier shall provide a skilled programmer/ instrumentation engineer or technician who shall complete troubleshooting and start-up to place the entire system into satisfactory operation. Engineer or technician shall make the necessary inspection of the completed installation, make the necessary final field adjustments, and make program revisions as required for start-up.

3.05 ON-SITE SERVICES

A. In addition to other services specified, provide a competent programmer/instrumentation engineer or technician to provide heat-trace system startup and demonstration.

B. All on-site service shall be at times approved by Owner.

C. At project completion, Supplier shall certify in writing that all un-used service hours will be provided at Owner's request during the first three years of operation. The remaining service hours shall be fulfilled by either a software engineer or field service technician as required by the task requested by Owner, at no cost.

3.06 SUPPLIES

A. Contractor shall provide all expendable items such as lamps, fuses, etc. for system startup, checkout, and during the acceptance test.

B. At Final Completion, Contractor shall furnish the following expendable items:

1. Twenty (20) percent spare fuses and lamps of each type furnished, but not less than four (4) of each type.

END OF SECTION 40 90 00