

SECTION 009100 – ADDENDUM NO. 4

Issued to All Bid Document Holders of Record

Date: September 30, 2015
Project Name: Northwest Sewer & Outfall
Village Bid No.: VRNTL-16-B-03
Project No.: 78333

This Addendum forms a part of the Contract described above. The original Contract Documents and any prior Addenda remain in full force and effect except as modified by the following which shall take precedence over any contrary provisions in the prior documents.

PROJECT MANUAL:

1. Section 012000 - Measurement and Payment
 - a. 1.02 Pay Items. Revisions have been made to seeding pay items. See attached section.
2. Section 329200 - Lawns
 - a. 2.05 Erosion Control Netting & Blankets. Excelsior blanket specifications have been added. See attached section.
3. Section 333900 - Utility Structures
 - a. 2.01 Materials and 3.01 Manholes. Requirement for exterior coal-tar coating has been removed. See attached section.

Each Bidder shall acknowledge receipt of this Addendum by affixing his signature below, by noting this Addendum on his Bid Form, and by attaching this Addendum to his Bid.

Burns & McDonnell Engineering Company
1431 Opus Place, Suite 400
Downers Grove, IL 60515

ACKNOWLEDGEMENT

The undersigned acknowledges receipt of this Addendum and the Bid submitted is in accordance with information, instructions and stipulations set forth herein.

Bidder: _____]

By: _____]

Date: _____]

END OF SECTION 009100

SECTION 012000 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL INFORMATION

1.01 MEASUREMENT AND PAYMENT:

- A. This Section describes the measurement and payment for the Work to be done under the items included in this Contract.
- B. Each unit or lump-sum price stated in the Bid shall constitute full compensation as herein specified for each item of work completed in accordance with the Contract Documents. The price shall be full compensation for furnishing all materials and for all labor, equipment, fees, tools and incidentals necessary to complete the item as included in the Contract Documents.
- C. No separate measurement and payment shall be made for Work not specifically listed in this Section. It shall be understood that all Work necessary to complete the Contract as included in the Contract Documents shall be included in cost of the unit and lump sum items included in the Contract.

1.02 PAY ITEMS:

- A. Tree Removal (6 to 15 Units Diameter) – Pay Item No. 1
 - 1. This work shall consist of the clearing and removal of trees (6 to 15 Units Diameter), and other vegetation as shown on the plans and as directed by the Engineer. This work shall be in accordance with Section 201 of the IDOT Standard Specifications for Road and Bridge Construction.
 - 2. The cost of this work shall be paid for at the unit price per each of Tree Removal (6 to 15 Units Diameter).
- B. Tree Removal (Over 15 Units Diameter) – Pay Item No. 2
 - 1. This work shall consist of the clearing and removal of trees (Over 15 Units Diameter), and other vegetation as shown on the plans and as directed by the Engineer. This work shall be in accordance with Section 201 of the IDOT Standard Specifications for Road and Bridge Construction.
 - 2. The cost of this work shall be paid for at the unit price per each of Tree Removal (Over 15 Units Diameter).
- C. Tree Removal, Acres – Pay Item No. 3
 - 1. This work shall consist of the clearing and removal of trees, and other vegetation as shown on the plans and as directed by the Engineer. This work shall be in accordance with Section 201 of the IDOT Standard Specifications for Road and Bridge Construction.
 - 2. The cost of this work shall be paid for at the unit price per acre of Tree Removal, Acres.
- D. Temporary Fence – Pay Item No. 4
 - 1. This work shall consist of the installation of silt fence as indicated on the plans and around the soil stockpile located on West WWTP property and/or adjacent to trench excavation within the easement limits. Contractor shall maintain and repair silt fence as required and as directed by the Engineer throughout the duration of the project. The Contractor shall conduct daily inspections during construction to ensure that the silt fence is properly installed.
 - 2. The cost of this work shall be paid for per linear foot of Temporary Fence.
- E. Trench Backfill – Pay Item No. 5
 - 1. This work shall be in accordance with Section 208 of the IDOT Standard Specifications for Road and Bridge Construction.
 - 2. The cost of this work shall be paid for at the unit price per cubic yard of Trench Backfill.
- F. Topsoil Excavation and Placement – Pay Item No. 6
 - 1. This work shall be in accordance with Section 211 of the IDOT Standard Specifications for Road and Bridge Construction. Prior to sewer installation the Contractor shall strip all

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

- topsoil from agricultural areas within easement limits to a depth of 18 inches minimum and stockpile it at the West WWTP and adjacent to trench excavation within the easement limits. Stockpile shall not be located on CN Railroad property. After backfilling sewer, topsoil shall be applied to existing grade. This work includes surface preparation, application of topsoil, rough grading, and final grading.
2. The cost of this work shall be paid for at the unit price per cubic yard of Topsoil Excavation and Placement.
- G. Topsoil Furnish & Place – Pay Item No. 7
1. This work includes all labor and materials necessary to apply a 4-inch layer of topsoil to all non-paved, non-agricultural areas disturbed as a result of the Contractor's activities. This work includes surface preparation, application of topsoil, rough grading, and final grading.
 2. This work will be paid for at the contract unit price per square yard for Topsoil, Furnish and Place, 4".
- H. Grading & Shaping Ditches – Pay Item No. 8
1. This work includes all labor and materials necessary to shape and grade the ditches as indicated on the plans. This work includes surface preparation, removal and disposal of unsuitable material, rough grading, and final grading. This work shall be in accordance with Section 214 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per foot for Grading & Shaping Ditches.
- A. Seeding, Class 1B – Pay Item No. 9
1. This work includes all labor and materials necessary to seed, fertilize, and water grassy areas disturbed as a result of the Contractor's operations. This work includes all necessary, grass seed, fertilizer, mulch, ~~excelsior blanket~~, ~~jute netting~~, soil preparation, application of materials, watering, protection of seeded areas, and maintenance as required for installation of this item. This work shall be completed per section 329200 of these specifications.
 2. This work will be paid for at the contract unit price per square yard for Seeding, Class 1B.
- B. Seeding, Class 2A – Pay Item No. 10
1. This work includes all labor and materials necessary to seed, fertilize, and water grassy areas disturbed as a result of the Contractor's operations. This work includes all necessary, grass seed, fertilizer, mulch, ~~excelsior blanket~~, ~~jute netting~~, soil preparation, application of materials, watering, protection of seeded areas, and maintenance as required for installation of this item. This work shall be completed per section 329200 of these specifications.
 2. This work will be paid for at the contract unit price per square yard for Seeding, Class 1B.
- C. Seeding, Class 3 – Pay Item No. 11
1. This work includes all labor and materials necessary to seed, fertilize, and water grassy areas disturbed as a result of the Contractor's operations. This work includes all necessary, grass seed, fertilizer, mulch, ~~jute~~ ~~jute~~ netting, soil preparation, application of materials, watering, protection of seeded areas, and maintenance as required for installation of this item. This work shall be completed per section 329200 of these specifications.

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

2. This work will be paid for at the contract unit price per square yard for Seeding, Class 1B.
- D. Stone Riprap, Class A3 – Pay Item No. 12
 1. This work includes all labor and materials necessary to install riprap in the locations indicated on the plans. This work includes all necessary surface preparation, application of materials, grading, bedding material, and maintenance as required for installation of this item. This work shall be in accordance with Section 281 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per square yard for Stone Riprap, Class A3.
- E. Stone Riprap, Class ~~A5-A6~~ – Pay Item No. 13
 1. This work includes all labor and materials necessary to install riprap in the locations indicated on the plans. This work includes all necessary surface preparation, application of materials, grading, bedding material, and maintenance as required for installation of this item. This work shall be in accordance with Section 281 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per square yard for Stone Riprap, Class ~~A5-A6~~.
- F. Preparation of Base – Pay Item No. 14
 1. This work includes all labor and materials necessary to prepare the base. All work shall conform to the appropriate articles of Section 358 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per square yard for Preparation of Base.
- G. Aggregate Base Repair – Pay Item No. 15
 1. This work includes all labor and materials necessary to repair all failures (potholes, deep depressions, or ruts) in the existing surface. All work shall conform to the appropriate articles of Section 358 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per ton for Aggregate Base Repair.
- H. Bituminous Materials (Prime Coat) – Pay Item No. 16
 1. Bituminous Materials (Prime Coat) shall be applied to oil and chip roadways designated as Bituminous Surface Treatment, Class A-2. All work shall conform to the appropriate articles of Section 403 of the IDOT Standard Specifications for Road and Bridge Construction and shall include all necessary bituminous coats, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per gallon for Bituminous Materials (Prime Coat).
- I. Bituminous Materials (Cover & Seal Coats) – Pay Item No. 17
 1. Bituminous Materials (Cover & Seal Coats) shall be applied to oil and chip roadways designated as Bituminous Surface Treatment, Class A-2. All work shall conform to the appropriate articles of Section 403 of the IDOT Standard Specifications for Road and Bridge Construction and shall include all necessary bituminous coats, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per gallon for Bituminous Materials (Cover & Seal Coats).
- J. Cover Coat Aggregate – Pay Item No. 18

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

1. Cover Coat Aggregate shall be applied to oil and chip roadways designated as Bituminous Surface Treatment, Class A-2. All work shall conform to the appropriate articles of Section 403 of the IDOT Standard Specifications for Road and Bridge Construction and shall include all necessary aggregates, grading, placement of materials, and compaction as required for installation of this item.
2. This work will be paid for at the contract unit price per ton for Cover Coat Aggregate.
- K. Seal Coat Aggregate – Pay Item No. 19
 1. Seal Coat Aggregate shall be applied to oil and chip roadways designated as Bituminous Surface Treatment, Class A-2. All work shall conform to the appropriate articles of Section 403 of the IDOT Standard Specifications for Road and Bridge Construction and shall include all necessary aggregates, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per ton for Seal Coat Aggregate.
- L. Portland Cement Concrete Sidewalk, 5” – Pay Item No. 20
 1. All work shall conform to the appropriate articles of Section 424 of the IDOT Standard Specifications for Road and Bridge Construction and shall include all necessary aggregate leveling courses, concrete pavement courses, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per square foot for Portland Cement Concrete Sidewalk 5”.
- M. Pavement Removal, Full Depth – Pay Item No. 21
 1. All paved areas disturbed as a result of construction operations shall be restored as specified. This work includes all necessary sawcutting, pavement removal, and disposal of materials.
 2. This work will be paid for at the contract unit price per square yard for Pavement Removal, Full Depth.
- N. Sidewalk Removal – Pay Item No. 22
 1. This work includes all labor and materials necessary to remove existing sidewalk. This work shall be in accordance with Section 440 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per square foot for Sidewalk Removal.
- O. Class B Patches, Type IV, 8 inch – Pay Item No. 23
 1. All paved areas disturbed as a result of construction operations shall be restored as specified. This work includes all necessary pavement courses, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per square yard for Class B Patches, Type IV, 8 inch.
- P. Class D Patches, Type IV, 4 inch – Pay Item No. 24
 1. All paved areas disturbed as a result of construction operations shall be restored as specified. This work includes all necessary bituminous pavement courses, grading, placement of materials, and compaction as required for installation of this item.
 2. This work will be paid for at the contract unit price per square yard for Class D Patches, Type IV, 4 inch.
- Q. Pipe Culvert Removal – Pay Item No. 25
 1. This work shall consist of all labor and materials necessary to remove an existing culvert. This work shall conform to the appropriate articles of Section 501 of the IDOT Standard

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Specifications for Road and Bridge Construction. The Contractor shall excavate and expose the existing culvert; this excavation shall not be paid for separately but shall be included in the unit price.

2. This work will be paid for at the contract unit price per foot for Pipe Culvert Removal.
- R. Precast Concrete Box Culverts 4' X 2' – Pay Item No. 26
1. This work shall consist of all labor and materials necessary to install 4' X 2' box culverts. This work includes all necessary excavation of material, grates, and any necessary fittings as required for installation of this item.
 2. This work will be paid for at the contract unit price per each for Precast Concrete Box Culverts 4' X 2'.
- S. Pipe Culvert, Class D, Type 1 12" – Pay Item No. 27
1. This work shall consist of all labor and materials necessary to install 12-inch diameter CMP culvert. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item. This work shall conform to the appropriate articles of Section 542 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per foot for Pipe Culvert, Class D, Type 1 12".
- T. Precast Concrete Flared End Sections 24" – Pay Item No. 28
1. This work shall consist of all labor and materials necessary to install 24" flared end sections. This work includes all necessary excavation of material, grates, and any necessary fittings to assemble and attach to the storm sewer as required for installation of this item.
 2. This work will be paid for at the contract unit price per each for Precast Concrete Flared End Sections 24".
- U. Concrete End Section, Standard 542011, 48", ~~1:3 1:2~~ – Pay Item No. 29
1. This work shall consist of all labor and materials necessary to install a concrete headwall. This work includes all necessary excavation of material, grading, grates, and any necessary fittings to assemble and attach to the storm sewer as required for installation of this item. This work shall conform to the appropriate articles of Section 542 of the IDOT Standard Specifications for Road and Bridge Construction.
 2. This work will be paid for at the contract unit price per each for Concrete End Section, Standard 542011, 48", ~~1:3 1:2~~.
- V. Storm Sewer, Rubber Gasket, Class A, Type 1 18" RCP – Pay Item No. 30
1. This work shall consist of all labor and materials necessary to install 18-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 1 18" RCP.
- W. Storm Sewer, Rubber Gasket, Class A, Type 1 24" RCP – Pay Item No. 31
1. This work shall consist of all labor and materials necessary to install 24-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 1 24" RCP.

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

- X. Storm Sewer, Rubber Gasket, Class A, Type 2 24” RCP – Pay Item No. 32
1. This work shall consist of all labor and materials necessary to install 24-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 2 24” RCP.
- ~~Y.~~ ~~Storm Sewer, Rubber Gasket, Class A, Type 2 30” RCP – Pay Item No. 33~~
- ~~1. This work shall consist of all labor and materials necessary to install 30-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.~~
 - ~~2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 2 30” RCP.~~
- ~~Z.~~ Y. Storm Sewer, Rubber Gasket, Class A, Type 2 36” RCP – Pay Item No. ~~33~~ 34
1. This work shall consist of all labor and materials necessary to install 36-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 2 36” RCP.
- ~~AA.~~ Z. Storm Sewer, Rubber Gasket, Class A, Type 2 48” RCP – Pay Item No. ~~34~~ 35
1. This work shall consist of all labor and materials necessary to install 48-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 2 48” RCP.
- ~~BB.~~ AA. Storm Sewer, Rubber Gasket, Class A, Type 4 24” RCP – Pay Item No. ~~35~~ 36
1. This work shall consist of all labor and materials necessary to install 24-inch diameter RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 4 24” RCP.
- ~~CC.~~ BB. Storm Sewer, Rubber Gasket, Class A, Type 2 Equivalent Round Size 48” – Pay Item No. ~~36~~ 37
1. This work shall consist of all labor and materials necessary to install 60-inch by 38-inch diameter elliptical RCP storm sewer. This work includes all necessary trenching, sheeting, bracing, dewatering, storm sewer, gaskets, pipe embedment, and trench backfill as required for installation of this item.
 2. This work will be paid for at the contract unit price per foot for Storm Sewer, Rubber Gasket, Class A, Type 2 Equivalent Round Size 48”.
- ~~DD.~~ CC. Storm Sewer Removal 24” – Pay Item No. ~~37~~ 38
1. This work shall consist of all labor and materials necessary to remove 24-inch diameter RCP storm sewer. This work shall conform to the appropriate articles of Section 551 of the IDOT Standard Specifications for Road and Bridge Construction. The Contractor

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shall excavate and expose the existing pipe; this excavation shall not be paid for separately but shall be included in the unit price.

2. This work will be paid for at the contract unit price per foot for Storm Sewer Removal 24”.

~~EE~~.DD. Storm Sewer Removal 30” – Pay Item No. ~~38~~ 39

1. This work shall consist of all labor and materials necessary to remove 30-inch diameter RCP storm sewer. This work shall conform to the appropriate articles of Section 551 of the IDOT Standard Specifications for Road and Bridge Construction. The Contractor shall excavate and expose the existing pipe; this excavation shall not be paid for separately but shall be included in the unit price.
2. This work will be paid for at the contract unit price per foot for Storm Sewer Removal 30”.

~~FF~~.EE. Adjusting Sanitary Sewers, 8-Inch Diameter or Less – Pay Item No. ~~39~~ 40

1. This work shall consist of all labor and materials necessary to adjust a sanitary service lateral, 8” diameter or less including the removal and replacement of the existing lateral with pipe of equivalent diameter and type. The notification of customers of the interruption of services shall be included in the cost. This work shall conform to the appropriate articles of Section 563 of the IDOT Standard Specifications for Road and Bridge Construction.
2. Lateral to be constructed through a proposed manhole. Lateral piping through the manhole shall be Class 52 ductile iron pipe (DIP) as specified in Section 333100. DIP through manhole shall be considered included in the cost of Adjusting Sanitary Sewers, 8-Inch Diameter or Less.
3. This work will be paid for at the contract unit price per foot for Adjusting Sanitary Sewers, 8-Inch Diameter or Less.

~~GG~~.FF. Catch Basin, Type A, 4’ Diameter, Type 8 Grate – Pay Item No. ~~40~~ 41

1. This work shall consist of all labor and materials necessary to install 4-foot catch basins. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, catch basin, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item.
2. This work will be paid for at the contract unit price per each for Catch Basin, Type A, 4’ Diameter, Type 8 Grate.

~~HH~~.GG. Manhole, Type A, 4’ Diameter, Type 1 Frame, Closed Lid – Pay Item No. ~~41~~ 42

1. This work shall consist of all labor and materials necessary to install 4-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item. Manholes located in farmland shall be buried a minimum of 24” below existing ground elevation as called out in the plans.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 4’ Diameter, Type 1 Frame, Closed Lid.

~~H~~.HH. Manhole, Type A, 5’ Diameter, Type 1 Frame, Closed Lid – Pay Item No. ~~42~~ 43

1. This work shall consist of all labor and materials necessary to install 5-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item. Manholes located in farmland shall be buried a minimum of 24” below existing ground elevation as called out in the plans.

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

2. This work will be paid for at the contract unit price per each for Manhole, Type A, 5' Diameter, Type 1 Frame, Closed Lid.

~~II~~.II. Manhole, Type A, 6' Diameter, Type 1 Frame, Open Lid – Pay Item No. 43 44

1. This work shall consist of all labor and materials necessary to install 6-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 6' Diameter, Type 1 Frame, Open Lid.

~~KK~~.JJ. Manhole, Type A, 6' Diameter, Type 1 Frame, Closed Lid – Pay Item No. 44 45

1. This work shall consist of all labor and materials necessary to install 6-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item. Manholes located in farmland shall be buried a minimum of 24" below existing ground elevation as called out in the plans.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 6' Diameter, Type 1 Frame, Closed Lid.

~~LL~~.KK. Manhole, Type A, 6' Diameter, Type 8 Grate – Pay Item No. 45 46

1. This work shall consist of all labor and materials necessary to install 6-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 6' Diameter, Type 8 Grate.

~~MM~~.LL. Manhole, Type A, 7' Diameter, Type 1 Frame, Closed Lid – Pay Item No. 46 47

1. This work shall consist of all labor and materials necessary to install 7-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item. Manholes located in farmland shall be buried a minimum of 24" below existing ground elevation as called out in the plans.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 7' Diameter, Type 1 Frame, Closed Lid.

~~NN~~.MM. Manhole, Type A, 8' Diameter, Type 1 Frame, Closed Lid – Pay Item No. 47 48

1. This work shall consist of all labor and materials necessary to install 8-foot manholes. This work includes all necessary trenching, excavation, sheeting, bracing, dewatering, manhole, Hilti anchors, bolting frame to slab, pipe embedment, pipe connections, and trench backfill as required for installation of this item. Manhole frames located in farmland shall be buried a minimum of 24" below existing ground elevation as called out in the plans.
2. This work will be paid for at the contract unit price per each for Manhole, Type A, 8' Diameter, Type 1 Frame, Closed Lid.

~~OO~~.NN. Removing Manholes – Pay Item No. 48 49

1. This work shall consist of all labor and materials necessary to remove manholes. This work shall conform to the appropriate articles of Section 605 of the IDOT Standard Specifications for Road and Bridge Construction
2. This work will be paid for at the contract unit price per each for Removing Manholes.

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

~~PP.OO.~~ Removing Inlets – Pay Item No. ~~49~~ 50

1. This work shall consist of all labor and materials necessary to remove inlets. This work shall conform to the appropriate articles of Section 605 of the IDOT Standard Specifications for Road and Bridge Construction
2. This work will be paid for at the contract unit price per each for Removing Inlets.

~~QQ.PP.~~ Non-Special Waste Disposal – Pay Item No. ~~50~~ 51

1. This work shall consist of the segregation, hauling and satisfactory disposal outside the limits of the job of all contaminated excavated material necessary for construction of the project. All work shall be in accordance with Section 669 of the Standard Specifications and as specified herein.
2. Contaminated waste shall be defined as any excavated material with contaminants exceeding levels that prohibit disposal at a CCDD or SOH only receiving facility.
3. It is the contractor's responsibility to locate a receiving facility for the contaminated material and to provide the facility with any required paperwork and/or analysis. Any paperwork or analysis required will be at the expense of the contractor. The contractor shall provide the engineer (not limited to) copies of said paperwork/analysis, load tickets and receiving facility sign-offs for each load of contaminated soil disposed.
4. This work will be paid for at the contract unit price per cubic yard for Non-Special Waste Disposal.

~~RR.QQ.~~ Mobilization – Pay Item No. ~~51~~ 52

1. Mobilization will be paid for at the contract lump sum price for the mobilization of all equipment to and from the site. The lump sum price for this item shall constitute full compensation for all equipment, materials, labor, fees, tools and incidentals necessary to complete this item.

~~SS.RR.~~ Construction Layout – Pay Item No. ~~52~~ 53

1. Construction staking and marking shall conform to article 105.09 of the Standard Specifications. The Engineer will provide survey / project control points. The Contractor shall set all construction information stakes that mark the location, alignment, elevation and grade of the work. Requests for control information must be made 48 hours prior to the date needed.
2. The cost of construction staking will be paid for at the contract lump sum price for Construction Layout. No additional compensation shall be given for re-staking any aspect of the work for any reason.

~~TT.SS.~~ Steel Casings 42” – Pay Item No. ~~53~~ 54

1. Forty-two (42) inch diameter steel casing pipe will be measured for payment in place in feet. This work shall include all necessary launch and/or receiving pit excavation, trenching, sheeting, bracing, jacking pits, dewatering, boring and auguring, steel casing pipe, welding, primer application, fittings, ports, lubrication, intermediate pipes, adapters/cutting shoes, spoil removal from new casing pipe, written logs, and pipe supports of size and material specified, casing spacers, spacer bands, pipe embedment, trench backfill, brick and mortar end seals, all submittals, vibration control, and all system design as required for installation of the pipe.
2. This work will be paid for at the contract unit price per foot for Steel Casings 42”.

~~UU.TT.~~ Traffic Control and Protection – Pay Item No. ~~54~~ 55

1. This work shall be done in accordance with Part IV of Illinois Department of Transportation Reprint of the "Manual on Uniform Traffic Control Devices" published by the Federal Highway Administration, the appropriate articles of Section 1084 of the

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

Standard Specifications and the Standard Specification for Traffic Control Devices adopted April 1, 2013 by the Illinois Department of Transportation. All applicable state standards for traffic control devices, lane closures and traffic control staging shall conform to current IDOT standards at all times.

- a. This item of work shall include the furnishing, installing; maintaining, relocating and removing all traffic control devices used for the purpose of regulating, warning, or directing traffic during the construction or maintenance of this improvement.
- b. When traffic is to be directed over a detour route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices and signing along the detour route according to the details shown in the plans.
- c. The governing factor in the execution and staging of work for this project is to provide the motoring public, residents, and business owners with the safest possible conditions along the roadway and in the construction zone. The Contractor shall so arrange his operations as to keep the closing of any lane of the roadway to a minimum.
- d. All operations which require a reduction in the number of lanes of traffic shall comply with the aforementioned standards including a flagman posted at each end of the lane closure at all times. "stop" and "slow" paddles shall be used to control traffic. Flags will NOT be allowed as the sole means of traffic control. Minimum lane widths shall be 10 feet. Single lane roads will not be allowed without flagmen, and under no circumstances will a one lane condition remain overnight unless approved by the Village of Rantoul.
- e. Type II barricades with working steady burn light units shall be used whenever the change in pavement height exceeds 2 inches due to any construction activity and at all butt joints. The Engineer reserves the right to stop any construction activity when traffic control is neglected.
- f. Traffic control devices include signs and their supports, signals, pavement markings, barricades (with sandbags if necessary), channelization devices, warning lights, arrow boards, flaggers, or any other device used for the purpose of guiding traffic through or detouring around the construction zone.
- g. The Contractor will be responsible for the proper location, installation, and arrangement of all traffic control devices. Special attention shall be given to advance warning signs during construction operations in order to keep lane assignment consistent with barricade placement at all times/ The Contractor shall cover or remove all traffic control devices which are inconsistent with detour or lane assignment patterns during the transition from one construction stage to another.
- h. The Contractor shall ensure that all traffic control devices installed by him are operational 24 hours a day, including Sundays and Holidays.
- i. The Contractor shall be reachable on a 24 hour a day basis to receive notification of any deficiencies regarding traffic control and protection and shall dispatch personnel, materials, and equipment to correct any such deficiencies. The Contractor shall respond to any call from the Village of Rantoul concerning a request for improving or correcting traffic control devices and begin making the requested repairs within two hours from the time of notification.
- j. When traveling in lanes open to public traffic, the Contractor's vehicles shall always move with and not against the flow of traffic. These vehicles shall enter and leave

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

work areas in a manner which will not be hazardous to or interfere with traffic and shall not park or stop except within designated work areas. Those vehicles belonging to the Contractor or his employees shall remain on public property area only and shall not pull into, park, or block any access to private property.

- k. Any drop off greater than three inches, but less than six inches, within eight feet of the pavement edge shall be protected by Type I or II barricades equipped with mono-directional steady burn lights at 100-foot center to center spacing. If the drop off within eight feet of the pavement edge exceeds six inches, the barricades mentioned above shall be placed at 50-foot center to center spacing. Barricades that must be placed in excavated areas shall have leg extensions installed such that the top of the barricade is in compliance with the height requirement of Standard 702001. Vertical panels or other delineating devices may be substituted for Type I or Type II barricades with the approval of the Engineer.
- l. Delays to the Contractor caused by complying with these requirements will be considered included in the price of the pay item Traffic Control & Protection and no additional compensation will be allowed.
- 2. This work will be paid for at the contract lump sum price for Traffic Control and Protection.

~~VV.UU.~~ Field Tile Connection – Pay Item No. ~~55, 56 56, 57~~

- 1. To the Best of the Engineer's knowledge, there are no known or reported existing field tiles or sewers within the limits of this project, except as shown on the plans. However this special provision shall also apply, should an unrecorded or unknown field tile be discovered during construction. This item shall consist of furnishing all labor, materials, machinery, tools and supervision for the removal, plugging and backfilling of existing drain tiles that maybe encountered during construction operations in accordance with these Special Provisions. Existing drain tiles flowing toward the project shall be intercepted and connected to the proposed storm sewer. When connected to the storm sewer the existing drain tile shall be plugged downstream from this connection point as herein described. Existing drain tile to be plugged shall be plugged with precast concrete or masonry units mortared in place or with poured in place concrete. Existing drain tile to be connected to the proposed storm system shall be connected by coring the RCP Storm Sewer and using saddle-type fitting with an elastomeric ring-gasketed bell-end service connection and minimum wall thickness of SDR 26. Saddle-type fitting to be supplied with a rubber sealing gasket and stainless steel straps for connection to pipe. Pipe shall be PVC SDR 26.
- 2. This work will be paid for at the contract unit price per each for Field Tile Connection to Proposed Sewer 8" Dia and Less or Field Tile Connection to Proposed Sewer Greater than 8" Dia.

~~WW.VV.~~ Field Tile Repair – Pay Item No. ~~57, 58 58, 59~~

- 1. To the Best of the Engineer's knowledge, there are no known or reported existing field tiles or sewers within the limits of this project, except as shown on the plans. However this special provision shall also apply, should an unrecorded or unknown field tile be discovered during construction. This item shall consist of furnishing all labor, materials, machinery, tools and supervision for the repair and backfilling of damaged existing drain tiles caused by construction operations in accordance with these Special Provisions. Pipe shall be PVC SDR 26.

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

2. This work will be paid for at the contract unit price per each for Field Tile Repair 8” Dia and Less or Field Tile Repair Greater than 8” Dia.

~~XX.WW.~~ Channel Cleaning and Dredging – Pay Item No. ~~59 60~~

1. This work shall consist of all labor and materials necessary to dredge the drainage ditch. Contractor shall dredge and remove debris from County Road 3100N to the north property line of the West Wastewater Treatment plant. Contractor shall legally dispose of all dredge waste and debris. Legal disposal of waste material shall be included in the cost of Channel Dredging. This item shall consist of furnishing all labor, materials, machinery, tools, supervision and disposal.
2. This work shall be performed by one of the following subcontractors:
 - a. Dennis Martin Excavation: 217-202-0955; 217-897-1293
 - a-b. Franzen Construction Group: 217-202-0509; 217-469-2552
- ~~2-3.~~ This work will be paid for at the contract unit price per foot for Channel Dredging.

~~YY.XX.~~ Closing Invert, Brick and Mortar – Pay Item No. ~~60 61~~

1. This work shall consist of all labor and materials necessary to closing an invert. Contractor shall close off the invert using brick and mortar. This item shall consist of furnishing all labor, materials, machinery, tools and supervision.
2. This work will be paid for at the contract unit price per each for Closing Invert, Brick and Mortar.

~~ZZ.YY.~~ Chisel Plowing – Pay Item No. ~~61 62~~

1. This work shall consist of all labor and materials necessary to chisel plow disturbed agricultural areas. After sewer has been installed, backfilled, and topsoil has been spread, Contractor shall chisel plow all areas of agricultural fields where construction traffic has occurred.
2. This work will be paid for at the contract lump sum price for Chisel Plowing.

~~AAA.ZZ.~~ Stormwater Pollution Prevention Plan – Pay Item No. ~~62 63~~

1. This work shall consist of all labor and materials necessary to prepare the Stormwater Pollution Prevention Plan and acquire approval of stormwater permit from the IEPA.
2. This work will be paid for at the contract lump sum price for Stormwater Pollution Prevention Plan.

~~BBB.AAA.~~ Pothole Existing Utility – Pay Item No. ~~63 64~~

1. This work will be measured per each Pothole Existing Utility performed. This work includes all necessary sawcutting, excavation, sheeting, bracing, dewatering, and trench backfill as required for performance of this item. Excavations in turf areas shall be backfilled with excavated material. All excess excavated material shall be disposed of by the Contractor and is considered incidental to the cost of this item.
2. This work will be paid for at the contract unit price per each for Pothole Existing Utility.

~~CCC.BBB.~~ Chain Link Fence To Be Removed and Replaced – Pay Item No. ~~64 65~~

1. This work includes all necessary labor and materials to remove and install a section of chain link fence.
2. This work will be paid for at the contract unit price per foot for Chain Link Fence To Be Removed and Replaced.

~~DDD.CCC.~~ Coordination with Canadian National Railroad – Pay Item No. ~~65 66~~

1. This work includes coordination with Canadian National Railroad as required to complete the project. Specific requirements for Pipeline Installations can be found at: <http://www.cn.ca/en/delivering-responsibly/safety/erailsafe/utility-installations>

SECTION 012000 – MEASUREMENT AND PAYMENT: continued

The Pipeline Crossing Form has been filled out, submitted to Canadian National, and approved. Contractor is responsible for securing flagging and cable locate services, as well as providing insurance (statutory worker's compensation, employer's liability, automobile liability, railroad protective, and any other policies) as required by Canadian National and in accordance with the General Conditions. Costs associated with these services and any other coordination required should be included in this pay item.

2. This work will be paid for at the contract lump sum price for Coordination with Canadian National Railroad.

END OF SECTION 012000

SECTION 329200 - LAWNS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the following areas of Work:
 - 1. Preparation of lawn areas.
 - 2. Seeding.
 - 3. Mulching.
 - 4. Fertilizing of lawn areas.
 - 5. Maintenance.
- B. Related Work Specified Elsewhere:
 - 1. Earthwork and Site Preparation: SECTION 312000.

1.02 REFERENCES:

- A. Applicable Standards:
 - 1. American Society for Testing and Materials (ASTM) - Equivalent AASHTO standards may be substituted as approved:
 - a. D977 - Emulsified Asphalt.

1.03 SUBMITTALS:

- A. Certificates:
 - 1. Seed and fertilizer shall be accompanied by certificate from vendors certifying they meet requirements of these Specifications, stating botanical name, percentage by weight, percentage of purity, germination, and weed seed for each grass seed species.

PART 2 - PRODUCTS

2.01 TOPSOIL: Specified in SECTION 312000.

2.02 GRASS SEED:

- A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.
- B. Be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested:
 - 1. Seed Mixture:
 - a. Meet the requirements of the Illinois Department of Transportation (IDOT) Seed Mix No. 1B (Low Maintenance Lawn Mixture), as specified in the Standard Specifications for Road and Bridge Construction.
 - b. Meet the requirements of the Illinois Department of Transportation (IDOT) Seed Mix No. 2A (Salt Tolerant Roadside Mixture), as specified in the Standard Specifications for Road and Bridge Construction.
 - c. Meet the requirements of the Illinois Department of Transportation (IDOT) Seed Mix No. 3 (Northern Illinois Slope Mixture), as specified in the Standard Specifications for Road and Bridge Construction.
 - 2. Moldy seed or seed that has been damaged in storage shall not be used.

2.03 FERTILIZER:

SECTION 329200 - LAWNS: continued

- A. Commercial fertilizer of neutral character, with some elements derived from organic sources, containing not less than 12% phosphoric acid, 12% potassium, and 12% nitrogen.
- B. Deliver to site in labeled bags or containers.

2.04 MULCH:

- A. Vegetative Antierosion Mulch: Seed-free salt hay or threshed straw of wheat, rye, oats, barley, or other approved materials.
- B. Tackifiers:
 - 1. Asphalt Emulsion: Conform to ASTM D977, Type SS-1.
 - 2. Organic Glue: Hydrobond as manufactured by Erosion Control Products or approved equal.

2.05 EROSION-CONTROL NETTING & BLANKETS

-A. Jute Netting:

- 0.1. Uniform, open, plain weave mesh of smolder-resistant, unbleached single-jute yarn:
 - a. Yarn of loosely twisted construction and not vary in thickness by more than one-half its normal diameter.
- 0.2. Furnish in rolled strips and as follows:
 - a. Minimum width of 42 inches.
 - b. 5.5 wrap yarns by 3.5 filling yarns per inch.
- 3. Staples of No. 11 gage or heavier steel wire, U-shaped and not less than 6 inches in length.

B. Excelsior Blanket:

- 1. Excelsior blanket shall consist of machine-produced mat of curled wood excelsior of 80% 6-inch or longer fiber lengths, with consistent thickness and fibers evenly distributed over the entire area of the blanket
 - a. The top side of each blanket shall be covered with netting having a maximum mesh size of 1-1/2 by 3 inches, composed of cotton cord, twisted Kraft paper yarn, or biodegradable extruded plastic mesh
 - b. The blanket shall be furnished in rolled strips and shall be as follows:
 - (1) Minimum width: 48 inches
 - (2) Minimum dry weight: 0.8 pound per square yard
 - (3) Smolder resistant
 - c. Overlap blanket ends by 7 inches and edges by 4 inches
 - d. Anchor blanketing per manufacturer's recommendations. Size and material of blanket anchors shall meet the manufacturer's recommendations
- e. All erosion-control blanketing shall be laid within 24 hours of seeding application.

PART 3 - EXECUTION

3.01 SOIL PREPARATION:

- A. Dispose of any growth, rocks, or other obstructions which might interfere with tilling, seeding, sodding, or later maintenance operations. Remove stones over 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter.
- B. Thoroughly loosen and pulverize topsoil to a depth of at least 4 inches.
- C. Grade lawn areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades. Limit fine grading to areas which can be planted within immediate future.

SECTION 329200 - LAWNS: continued

- D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry off before planting of lawns. Do not create a muddy soil condition.
- E. Restore prepared areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.
- F. Spread planting soil mixture to depth required to meet thickness, grades, and elevations indicated after light rolling and natural settlement.
- G. Preparation of Unchanged Grades:
 - 1. Where lawns are to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows:
 - a. Till to a depth of not less than 6 inches.
 - b. Apply soil amendments and initial fertilizers.
 - c. Remove high areas and fill in depressions.
 - d. Till soil to a homogeneous mixture of fine texture, free of lumps, clods, stones, roots, and other extraneous matter.

3.02 FERTILIZING:

- A. Apply fertilizer at the rate of 400 pounds per acre to prepared seedbeds and sodbeds.
- B. Incorporate fertilizer into the soil to a depth of at least 2 inches by discing, harrowing, or raking, except where applied hydraulically on slopes steeper than 2 horizontal to 1 vertical.

3.03 SEEDING NEW LAWNS:

- A. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.
- B. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in two directions at right angles to each other.
- C. Sow not less than rate of 80 pounds per acre.
- D. Rake seed lightly into top 1/4-inch of soil, roll lightly, and water with fine spray.
- E. Seasonal Limitations:
 - 1. Perform seeding only during the following seasons:
 - a. October 16 to January 31.
 - (1) Contractor shall post a warranty bond for all seeding done during this timeframe.
 - b. February 1 to October 15.
- F. Methods of Application:
 - 1. Dry Seeding: Spreader or seeding machine.
 - 2. Hydroseeding: Mix seed, fertilizer and pulverized mulch with water and constantly agitate. Do not add seed to water more than 4 hours before application:
 - a. On slopes of 2 horizontal to 1 vertical or flatter, apply seed separately from fertilizer. Cover seed with soil to an average depth of 1/2-inch by raking or other approved methods.
 - b. On slopes steeper than 2 horizontal to 1 vertical, seed and fertilizer may be applied in a single operation. Incorporation into the soil will not be required.

3.04 MULCHING:

- A. Apply a mulch covering to all seeded areas.
- B. Vegetative Mulch with Asphalt Emulsion:
 - 1. Apply vegetative mulch at the rate of 2-1/2 tons per acre.
 - 2. Apply asphalt emulsion at the rate of 250 gallons per acre.
 - 3. Mulching machine shall inject emulsified asphalt at the proper rate directly into the air stream carrying the straw.

SECTION 329200 - LAWNS: continued

- C. Immediately following the application of the mulch, water the seeded area in one watering, in sufficient amount to penetrate the seedbed to a minimum depth of 2 inches. Perform so as not to cause erosion or damage to the seeded surface.
- D. Protect seeded areas against hot, dry weather or drying winds by applying mulch not more than 24 hours after completion of seeding operations.

3.05 NETTING:

- A. Install netting where indicated and immediately following mulching operations.
- B. Roll netting loosely over the required areas. Lifting and stretching of the material will not be permitted.
- C. Secure netting by staples spaced every 1 to 2 feet apart along top and bottom ends and no more than 4 feet apart along sides and across remaining unanchored netting forming an "X" pattern.
- D. Lap joints in the direction of water flow with at least a 2-inch overlap.
- E. After the netting is secured in place by staples, press firmly against the surface of the soil by tamping or by rolling with an approved smooth-wheel hand roller.
- F. Repair any seeded or mulched areas disturbed by the installation of the netting.

3.06 RECONDITIONING LAWNS:

- A. Recondition lawn areas damaged by Contractor's operations, including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required. Recondition other existing lawn areas where indicated.
- B. Provide fertilizer, seed or sod, and soil amendments as specified for new lawns and as required to provide satisfactorily reconditioned lawn. Provide new planting soil as required to fill low spots and meet new finish grades.
- C. Cultivate bare and compacted areas thoroughly to provide a good, deep planting bed.
- D. Remove diseased or unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor's operations including oil drippings, stone, gravel, and other construction materials. Replace with new topsoil.
- E. Where substantial lawn remains (but is thin), mow, rake, aerate if compacted, fill low spots, remove humps and cultivate soil, fertilize, and seed. Remove weeds before seeding or, if extensive, apply selective chemical weed killers as required. Apply a seedbed mulch, if required, to maintain moist condition.
- F. Water newly planted areas and keep moist until new grass is established.

3.07 PROTECTION:

- A. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.

3.08 MAINTENANCE:

- A. Mow grass to a height of 2 inches as soon as there is enough top growth to cut with mower. Remove no more than 40% of grass leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted.
- B. Remove weeds by pulling or chemical treatment.
- C. Perform maintenance until the date of final acceptance.
- D. Seeded Areas:
 - 1. Water as required by good practice and as necessary to obtain a flourishing cover.
 - 2. Repair any portion of the seeded surface which becomes gullied or otherwise damaged, or the seeding becomes damaged or destroyed.

SECTION 329200 - LAWNS: continued

- E. Apply second fertilizer application after first mowing and when grass is dry. Use fertilizer which will provide not less than 0.45 pound of actual nitrogen per 1,000 square feet of lawn area.

3.09 ACCEPTANCE OF LAWNS:

- A. When lawn Work is Substantially Complete, including maintenance, Engineer and Owner will, upon request, make an inspection to determine acceptability:
 - 1. Lawn Work may be inspected for acceptance in parts agreeable to Owner, provided Work offered for inspection is complete, including maintenance.
- B. Replant rejected Work and continue specified maintenance until reinspected by Engineer and Owner and found to be acceptable.
- C. Seeded lawns will be acceptable provided requirements, including maintenance, have been complied with and healthy, uniform, close stand of specified grass is established free of weeds, bare spots, and surface irregularities.

3.10 CLEANUP:

- A. Promptly remove soil and debris created by lawn Work from paved areas. Clean wheels of vehicles prior to leaving Site to avoid tracking soil onto surfacing of roads, walks, or other paved areas.

END OF SECTION 329200

SECTION 333900 - UTILITY STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the following structures and related appurtenances:
 - 1. Manholes.
 - 2. Thrust blocks.
- B. Related Work Specified Elsewhere:
 - 1. Concrete: DIVISION 3
 - 2. Excavation, Filling, and Backfilling for Structures: SECTION 312316.
- C. Applicable Standards:
 - 1. American Society for Testing and Materials (ASTM):
 - a. A48 - Gray Iron Castings.
 - b. C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 - c. C270 Mortar for Unit Masonry.
 - d. C443 Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
 - e. C478 Precast Reinforced Concrete Manhole Sections.
 - f. C478 - Precast Reinforced Concrete Manhole Sections.
 - 2. Federal Specification (FS):
 - a. SS-S-00210 - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Concrete: Reinforced, 4000 psi.
- B. Mortar:
 - 1. Conform to ASTM C270 Type M.
 - 2. Type II portland cement, Type S lime.
 - 3. Proportion 1 part portland cement to 1/4 part lime to not less than 2-1/4 nor more than 3 times the sum of the cement and lime used of loose damp sand.
- C. Castings:
 - 1. Manhole Steps:
 - a. Steel reinforced polypropylene plastic or rubber, M.A. Industries Model PS2-PF, American Step Company Model ML, or equal as approved by Engineer.
 - 2. Manhole Frames and Covers:
 - a. ASTM A48, Class 30B, pattern as specified for each structure under PART 3, this Section.
 - b. Interchangeable within same pattern.
 - 3. Conform to Drawings in all essentials of design. Weight shall be within 10% of that listed for pattern.
 - 4. Machine-bearing surfaces to provide even seating.
 - ~~5. Coat with coal tar pitch varnish.~~

PART 3 - EXECUTION

3.01 MANHOLES:

- A. Design:
 - 1. Construct as follows:

SECTION 333900 - UTILITY STRUCTURES: continued

- a. Precast manhole with precast concrete base:
 - (1) Precast manhole shall conform to ASTM C478, except riser shall conform to ASTM C76, Class II pipe with rubber O-ring gasket joint.
 - b. Conform to Drawings.
 - c. Provide Submittal for reinforced concrete manholes prior to installation.
 - d. Caulk and repair any leaks or remove entire Work and rebuild to obtain watertight construction.
- B. Manhole Frames and Cover:
- 1. Set frame level to proper grade on full bed of mortar.
- C. Connections:
- 1. Grout around pipes with nonmetallic nonshrink grout.
 - 2. Make provisions for future connections where indicated.
 - 3. Place pipe stub in manhole wall with bell or coupling outside manhole wall to provide flexible joint as indicated.
 - 4. Include plug or stopper capable of withstanding 4.3 psi of internal or external pressure without leakage for future connections.
- D. Invert Channels:
- 1. Form invert channel with 4,000 psi Type II portland cement concrete.
 - 2. Make changes in direction of flow with smooth curves of as large a radius as size of manhole permits.
 - 3. Make changes in size and grade smoothly and uniformly.
 - 4. Slope floor of manhole adjacent to channels as indicated.
 - 5. Finish channel bottom smoothly without roughness, irregularity, or pockets.
- ~~E. Waterproofing:~~
- ~~1. Apply coal tar coating to exterior walls on all manholes from base to finish grade:~~
 - ~~a. Carboline Bitumastic 300M.~~
 - ~~b. International Intertuf 100.~~
 - ~~c. Tnemec HB Tnemecol 46-465.~~
 - ~~2. Apply coating in two coats to minimum 12 mil dry film thickness per coat.~~

END OF SECTION 333900