

Bedding as specified within the CEAM Standard Specifications and shall be used for all ductile iron pipe (DIP) and reinforced concrete pipe (RCP) installations unless otherwise called for in the drawings or directed by the Engineer.

Backfilling above the encasement zone shall comply with the general requirements specified in 2600.3.E and the following:

1. Backfill within the roadbed or building pad areas shall be placed in accordance with MnDOT 2105.3.E and shall be compacted to Specified Density Requirements in accordance with MnDOT 2105.3.F.1.
2. Backfill not within the roadbed or building pad areas shall be compacted to 95 percent of maximum density (MnDOT Standard Proctor).
3. Maximum backfill lift thicknesses may be increased or decreased by authority and at the discretion of the Engineer in consideration of material type, material disposition, or the demonstrated capability of compaction equipment.
4. The Engineer shall have full authority to suspend backfill operations until the preceding lift of backfill has been determined by the Engineer to be fully compacted and a passing compaction test has been taken. No additional compensation for lost time shall be made if backfill operations are suspended by the Engineer for the purposes of determining adequate trench backfill compaction.

**2451.5 (CEAM 2600.5) BASIS OF PAYMENT**

The provisions of CEAM 2600.5 are modified and/or supplemented with the following;

Furnishing and placing of granular materials for foundation, bedding, cover or backfill placement as specified in connection with pipe or structure items shall be incidental to the pipe or structure item without any direct compensation being made.

For all utility work, granular foundation material (including 1 ½-inch clear rock) may be used in conjunction with or in lieu of dewatering. Any use of granular foundation material or other material to maintain a dry trench or improve the pipe foundation shall be considered incidental with no additional compensation.

**2501 PIPE CULVERTS**

The provisions of MnDOT 2501 are modified and/or supplemented as follows:

**2501.5 BASIS OF PAYMENT**

Payment will be made based on the following schedule:

| <u>Item No.</u> | <u>Item</u>                          | <u>Unit</u> |
|-----------------|--------------------------------------|-------------|
| 2501.502        | ___" RC PIPE APRON                   | EACH        |
| 2501.502        | ___" SPAN RC PIPE-ARCH APRON         | EACH        |
| 2501.602        | TRASH GUARD FOR ___" PIPE APRON      | EACH        |
| 2501.602        | TRASH GUARD FOR ___" SPAN PIPE APRON | EACH        |

**2502 SUBSURFACE DRAINS**

The provisions of MnDOT 2502 are modified and/or supplemented as follows:

**2502.1 DESCRIPTION**

The location and alignment of the subsurface drains and outlets are shown in a general manner on the Plans. Modifications to the proposed alignment may be made by the Engineer in the field to ensure that the drain properly collects groundwater and infiltration water that may accumulate in the bottom of granular base material.

Perforated corrugated thermoplastic (TP) pipe as designated, shall be installed in accordance with the requirements for subcut drains, (MnDOT 2502.3.F) **except that perforated pipe drains shall be bedded on coarse filter aggregate (MnDOT3149.2.H). Trenches shall also be backfilled with coarse filter aggregate.**

Tracer wire shall be installed with all thermoplastic pipe in accordance with CEAM 2611 and CEAM 2621.

## **2502.2 MATERIALS**

Delete MnDOT 2502.2.A1 and replace with the following:

### **A.1 Thermoplastic (TP)**

Provide thermoplastic pipe and fittings (for use as pipe sewers or subsurface drains) meeting the requirements of the Contract. If pipe is not specified in the Contract, use pipe meeting the applicable application, i.e. use perforated pipe for drainage application and unperforated pipe for outlet into ditch, etc.

1. AASHTM M278, Class PS 46, Polyvinyl Chloride (PVC) Pipe (perforated and unperforated)
2. Blank
3. ASTM D3034, Type PSM PVC Sewer Pipe, SDR 35, (unperforated only)
4. ASTM F758, Smooth-Wall PVC, Type PS 46 (perforated and unperforated)
5. ASTM F949, PVC Corrugated Sewer Pipe (perforated and unperforated)
6. ASTM D17885, Schedule 40 pipe (perforated & unperforated as applicable) with one of the following:
  - a. Perforated: Slotted with maximum slot width of  $\frac{1}{16}$  in and minimum slot area of  $1\frac{1}{2}$  sq. in/linear ft for 4 in diameter pipe and greater than 1 sq. in/linear ft for pipe having a diameter less than 4 in.
  - b. Perforated: Circular holes with two to four rows of holes. Hole diameter equal to  $\frac{3}{16}$  in to  $\frac{3}{8}$  in, and minimum area of holes  $1\frac{1}{2}$  sq. in/linear ft for 4 in diameter pipe and greater and 1 sq.in/linear ft for pipe having a diameter less than 4 in.
  - c. Unperforated.
7. AASHTO M252, Corrugated Polyethylene (CP) dual-wall, Type "S" (unperforated) or "SP" (perforated) pipe, PS 50.

If perforated pipe is specified, provide pipe with perforations in accordance with the applicable specification. Create all perforations at manufacturer's plant; no field perforations are allowed.

Unless otherwise specified in the applicable specifications, plans, or special provisions, the Contractor may choose the joint type.

Submit to the Engineer a manufacturer's Certificate of Compliance with each pipe shipment.

## **2502.3 CONSTRUCTION REQUIREMENTS**

Perforated PE pipe drains shall be placed according to the details shown on the individual plan or as directed by the Engineer.

### **B Laying Drains**

The contractor is responsible for maintaining drainage for all existing drain tile services within the project area for the duration of construction. If the contractor's construction phasing plan calls for the

removal of existing draitile facilities prior to the installation of new facilities, the contractor shall be responsible for maintaining drainage and no additional compensation.

Unless otherwise noted in the plans, drain grades shall not be less than 0.2 percent. The Contractor shall supply and use laser grade control equipment when placing all draitile pipe when pipe grades do not follow working grades at a constant depth.

The Contractor shall place 6-inch perforated Thermoplastic (TP) Pipe after the sub-cut is partially or totally backfilled.

## **D.2 Discharge Pipe**

Discharge pipes shall be connected to the drainage structures at a height of approximately 1 foot, but not less than 6 inches, above the top of the structure invert. The connection shall be core drilled unless otherwise **pre-approved** by the Engineer.

Pipe drains shall outlet to storm sewer drainage structures as noted in the plans or as directed by the Engineer.

## **E.1 Trenching**

Drains shall be placed by machine trencher capable of cutting the trench, shaping the trench bottom to cradle the lower one-third of the pipe, laying the pipe, and backfilling with filter aggregate in one simultaneous and continuous operation. Plowing will not be permitted. The trenching head shall be equipped with a shield to prevent adjacent material from caving.

The trench shall be backfilled with Filter Aggregate. Filter Aggregate shall be free flowing and receive vibratory compaction to the satisfaction of the Engineer. In addition to the required trench compaction, at least one pass of general compaction, as directed by the Engineer, shall be made over the trench prior to placing the overlying required pavement structure.

The trenching operation may be performed any time after at least 2 feet of sub-cut backfill has been placed and compacted. If the trenching is not done until the sub-cut is completely backfilled, only the lowermost 2 feet of the trench need be backfilled with Filter Aggregate. The remaining trench fill shall be similar to that required for the sub-cut and care must be taken to achieve satisfactory density.

## **2502.4 METHOD OF MEASUREMENT**

Connection of pipe drains to drainage structures and terminal points (i.e. existing draitile or draitile services) shall be incidental to the construction of subsurface drains.

## **2502.5 BASIS OF PAYMENT**

All surplus excavated materials not required for backfill shall be disposed of by the Contractor at no expense to the Owner and in a manner satisfactory to the Engineer. All costs associated with the disposal of the surplus excavated materials are considered incidental to the pay item.

Payment for subsurface drains of each size, type, kind and strength class, at the appropriate Contract prices per unit of measure will be compensation in full for all costs of furnishing and installing the item as specified including labor, materials, equipment, excavation, geotextile, fittings, and aggregates as specified, except as otherwise provided herein.

The non-perforated connecting pipe length and coupling(s) shall be included for payment with the discharge footage. Payment for TP Pipe Drain at the contract unit price per linear foot shall be full compensation for trenching, furnishing and placing non-perforated TP discharge pipe, wyes, tees, connectors, other connectors as necessary, connecting the discharge pipe into the drainage structure, backfill and compaction, and all other associated work required to install the non-perforated discharge pipes between the outlet drainage structures and the perforated pipe drains.

Payment will be made based on the following schedule:

| <u>Item No.</u> | <u>Item</u>                | <u>Unit</u> |
|-----------------|----------------------------|-------------|
| 2502.503        | 6" PERF TP PIPE DRAIN      | L F         |
| 2502.602        | 4" PVC PIPE DRAIN CLEANOUT | EACH        |

## **2503 (CEAM 2621) PIPE SEWERS**

The provisions of MnDOT 2503 shall apply, in addition to the provisions of CEAM 2621, Sanitary Sewer and Storm Sewer Installation, which are modified and/or supplemented as follows:

### **2503.2 (CEAM 2621.2) MATERIALS**

The provisions of CEAM 2621.2 are modified and/or supplemented with the following:

#### **A.3 Reinforced Concrete Pipe and Fittings**

Reinforced gasketed concrete pipe and fittings with a rubber O-ring shall conform to the requirements of MnDOT 3236 for the type, size and strength class specified.

Manufacturers of reinforced concrete pipe may produce an alternate "offset joint" on the spigot end of the pipe. This type of offset joint is to be used with the profile or pre-lubricated pipe seal systems. See MnDOT Standard Plate 3006.

#### **A.5 Polyvinyl Chloride Pipe and Fittings**

Sanitary sewer polyvinyl chloride (PVC) pipe and fittings shall conform to the CEAM requirements. Polyvinyl Chloride Pipe used for storm sewer installations shall conform to the requirements outlined in MnDOT 2503. Submit a manufacturer's Certificate of Compliance with each pipe shipment including date manufactured, nominal and actual inside pipe diameters.

#### **A.8 Corrugated Polyethylene Pipe**

Submit a manufacturer's Certificate of Compliance with each pipe shipment including date manufactured, nominal and actual inside pipe diameters.

Delete CEAM 2621.2.A.11 and replace with the following:

#### **A.11 Polypropylene Pipe**

Provide corrugated polypropylene (PP) dual-wall pipe with couplings and fittings meeting the requirements of the following:

1. AASHTO M330 dual wall Type "S" pipe, and
2. Section 12 of the AASHTO LRFD Bridge Design Specifications, and
3. Gasketed integral bell and spigot joint meeting the requirements of ASTM F2881, for respective diameters, and
4. Water tight joints that meet a 10.8 psi laboratory test per ASTM D3212 with a gasket that meets the requirements of ASTM F477, and
5. Protect polypropylene compounds from ultraviolet (UV) degradation with UV stabilizers or carbon black meeting the requirements and testing in AASHTO M330 and ASTM D3895.

Provide laboratory certification that the pipe connection for each size of pipe meets or exceeds these requirements. Submit shop drawings of each pipe coupler and any additional mechanical connections required by the plans. Mitered end sections are not to be constructed of polypropylene.

Provide polypropylene (PP) pipe and fittings manufactured from high-density polypropylene (PP) virgin compounds. Clean, reworked PP materials from the manufacturer's own production may be used if the pipe fittings produced meet the requirements of this section.

Store and handle polypropylene (PP) pipe as recommended by the manufacturer. Provide pipe manufactured no more than six months prior to installation. Do not use damaged pipe.

Polypropylene (PP) pipe is considered to be plastic pipe and must be installed according to MnDOT 2501.3.C.4 and must pass deflection testing for acceptance.

Submit a manufacturer's Certificate of Compliance with each pipe shipment including the date manufactured, nominal and actual inside pipe diameters.

Polypropylene (PP) manufacturing facilities are required to participate and be in compliance with AASHTO's National Transportation Product Evaluation Program (NTPEP) for producers of AASHTO M330 polypropylene (PP) pipe. The Engineer confirms the plant where the pipe is manufactured is in compliant status by checking the NTPEP website, a link is provided through the Approved Products List.

### **2503.3 (CEAM 2621.3) CONSTRUCTION REQUIREMENTS**

The provisions of CEAM 2621.3 are modified and/or supplemented with the following:

The Engineer shall receive notice 24 hours in advance for testing of sewers.

When the Contractor uses laser beam control for grade and alignment, the Contractor shall check into the grade stakes provided. Any discrepancies found between the laser beam elevation and grade stake elevation, or the line and grade shown on the plans, shall be immediately brought to the Engineer's attention before continuing pipe installation. Failure to check into grade stakes provided or to notify the Engineer of discrepancies shall put the full responsibility on the Contractor for any removal and reinstallation of pipe necessary to conform to the line and grade as shown in the Drawings.

#### **A.2 Pipe Laying Operations**

Dewatering to maintain pipe trenches free of water shall be considered incidental, unless a bid item has been included for Dewatering.

Install pipe to the alignment, grade, and location as shown in the drawings and/or staked in the field. No deviation from the drawings and/or staked alignment, grade, or location is allowed.

#### **A.4 Bulkheading Open Pipe Ends**

Mark end of sewer stubs with a wooden 4 in x 4 in marker. The marker shall extend adjacent to the plug and to a depth 6 in below, and shall extend 2 ft above the ground line. The marker shall be continuous without any breaks, and shall be vertical or plumb.

#### **C Sewer Service Installations**

It shall be the duty of the Contractor to keep a record of sewer service wye locations with respect to the nearest downstream manhole, but the Engineer will record ties on the end of all sewer services at the property line. When installing sewer services, the Contractor shall before backfilling, contact the Engineer or his representative and assist him in making ties to the end of the service in the open trench. At least two (2) ties shall be made for each service and if backfilling proceeds before such ties are made, the Contractor shall dig up the end of all such services with no additional compensation for the purpose of making ties. Recorded with the ties shall be size and depth of service. During backfilling, the Contractor shall furnish and place a vertical two-inch by two-inch (2"x2") wooden stake set flush with finished ground surface and extending down to the end of the sewer service. The service stub shall be marked with a 4x4 timber, 3' out of ground, painted green.

#### **D Manhole and Catch Basin Structures**

When connecting to an existing storm sewer stub the Contractor shall verify invert elevation, line, and grade of the existing stub to ensure that the installation of the proposed sewer facility can be constructed according to the plan requirements. The Contractor shall immediately inform the Project Representative of any deviation from the plan requirements due to the existing stub. In the event that the existing sewer stub does not facilitate the construction as planned, the Contractor shall submit to the Engineer unit prices for the removal and replacement of the stub to facilitate construction as planned if no unit bid prices are included in the awarded contract.

The Contractor shall be held liable for any damage caused to the existing structure or any existing pipes due to negligence on the part of the Contractor. Replacement or repairing of any damage caused to existing facilities when ordered by the Project Representative or the Engineer shall be at the Contractor's own cost.

All surplus excavated materials not required for backfill shall be disposed of by the Contractor at no expense to the Owner and in a manner satisfactory to the Engineer. All costs associated with the disposal of the surplus excavated materials are considered incidental to the pay item.

### **G. Televising**

All new sanitary sewer main shall be jetted clean and televised after the services are installed, as applicable, and prior to wear course paving. Televising should include panning the camera up to the sanitary sewer wyes and service lines so that it is visible. The Contractor shall supply two videos and two detailed reports within 15 days of the televising being complete. One set shall be supplied to the Engineer and one set to Owner. A digital copy of the report shall also be delivered to the Owner.

Prior to placement of wear course paving, the Engineer must review all sewer televising reports and conclude there are no subsurface deficiencies requiring excavation to correct.

The Contractor will be responsible for television inspection of the sanitary sewer after it has been constructed. The Owner reserves the right to view these television inspection records prior to final project acceptance and at any time within the warranty period.

Add the following new paragraph to CEAM 2621.3:

### **H. Sanitary Sewer By-Pass Pumping**

The Contractor shall furnish, install, maintain, and remove temporary pumps, pipes, automatic controls, and related appurtenances to allow continuous operation of sanitary sewer facilities whenever necessary to ensure service will be maintained during construction. Sanitary sewer facilities shall include, but are not limited to gravity sanitary sewer main, sanitary sewer force mains, sanitary sewer services, sanitary sewer lift stations, and/or sanitary sewer grinder pumps.

Sanitary sewer pipe sizes are shown on the Plans. The Contractor shall be responsible for verifying all sanitary sewer pipe sizes and locations within the project limits to determine the most appropriate manner to provide sanitary sewer bypass pumping.

The Contractor shall submit copies of the proposed pumping, piping, and control systems for sanitary sewer bypass pumping to the Engineer a minimum of seven days in advance of installing the sanitary sewer bypass pumping system.

The Contractor shall have one standby pump available on-site for each pumping location to use in the event of a pump failure. The standby pump shall be adequately sized to handle the rates of sanitary sewer flow being bypasses.

### **2503.5 (CEAM 2621.5) BASIS OF PAYMENT**

The provisions of CEAM 2621.5 are modified and/or supplemented with the following:

Sewer connections shall be paid per each connection of new sewer to existing sewer. All necessary labor, materials, and work required to make the connection shall be included in the price per each as provided in the Bid Form.

Unit bid shall include excavation, pumping, sheeting, pipe completely installed, and backfilled in-place. All measurements will be made along the centerline of the pipe and from center of manhole to center of manhole, or point of juncture with bends, tees or special structures. Riser service pipe installation will be paid as service pipe. Payment for sewer pipe shall be limited to 80% of the actual amount installed until all sewer has been tested, accepted and backfilled to subgrade elevations.

Payment will be made based on the following schedule:

| <u>Item No.</u> | <u>Item</u>                              | <u>Unit</u> |
|-----------------|--|-------------|
| 2503.503        | ___" SPAN RC PIPE-ARCH SEWER CL IIA      | L F         |
| 2503.503        | ___" RC PIPE SEWER DES 3006 CL III       | L F         |
| 2503.503        | ___" RC PIPE SEWER DES 3006 CL V         | L F         |
| 2503.601        | SANITARY SEWER BYPASS PUMPING            | LS          |
| 2503.602        | CONNECT TO EXISTING SANTIARY SEWER       | EACH        |
| 2503.602        | CONNECT TO EXISTING STORM SEWER          | EACH        |
| 2503.602        | CONNECT INTO EXISTING DRAINAGE STRUCTURE | EACH        |
| 2503.602        | CONNECT INTO EXISTING MANHOLE (SAN)      | EACH        |
| 2603.602        | CONNECT TO EXISTING SANITARY SEWER SER   | EACH        |
| 2503.602        | 8"X4" PVC02 WYE                          | EACH        |
| 2503.603        | TELEWISE SANITARY SEWER                  | L F         |
| 2503.603        | 4" PVC PIPE SEWER                        | L F         |
| 2503.603        | ___" PVC PIPE SEWER SDR 26               | L F         |
| 2503.603        | ___" PVC PIPE SEWER SDR 36               | L F         |
| 2503.603        | 4" PVC RISER PIPE                        | L F         |
| 2503.603        | ___" DUCTILE IRON PIPE SEWER             | L F         |

## **2504 (CEAM 2611) WATERMAIN**

The provisions of CEAM 2611, Standard Specifications for Watermain and Service Line Installation are modified and/or supplemented as follows:

### **2504.2 (CEAM 2611.2) MATERIALS**

The provisions of CEAM 2611.2 are modified and/or supplemented as follows:

#### **A.1 Ductile Iron Pipe and Ductile Iron and Gray Iron Fittings**

Ductile iron pipe shall be mechanical joint, Class 50 for 12 in and larger diameter, and Class 52 for 10 in and smaller diameter. All watermain shall have polyethylene encasement in accordance with AWWA C105.

All fittings for watermain shall be mechanical joint, Class 350, Ductile Iron Compact Fittings in accordance with AWWA C153. Fittings shall be furnished with fusion bonded epoxy external coating and/or interior lining in accordance with AWWA C550 and C116, 6 mil to 8 mil nominal thickness.

All nuts and bolts shall be stainless steel or Cor-Blue t-head bolts. All tie rod restraints and corresponding nuts shall be coated with an approved rust-proofing material.

#### **B. Fire Hydrants**

**2505.4 METHOD OF MEASUREMENT**

No measurement will be made of the various items that constitute Utility Coordination.

There will be no compensation for lost time due to private utility relocation.

**2505.5 BASIS OF PAYMENT**

All such work shall be considered incidental to the Project, with no additional compensation, unless a bid item is provided in the proposal.

Payment shall be made at the lump sum unit price bid and shall be compensation in full for all labor, equipment, and materials necessary to complete the work as specified.

Payment will be made based on the following schedule:

| <u>Item No.</u> | <u>Item</u>          | <u>Unit</u> |
|-----------------|----------------------|-------------|
| 2505.601        | UTILITY COORDINATION | LS          |

**2506 (CEAM 2621) MANHOLES AND CATCH BASINS**

The provisions of MnDOT 2506 shall apply, in addition to the provisions of CEAM 2621, Sanitary Sewer and Storm Sewer Installation, which are modified and/or supplemented as follows:

**2506.2 (CEAM 2621.2) MATERIALS**

The provisions of CEAM 2621.2 are modified and/or supplemented with the following:

**B. Metal Sewer Castings**

Metal Sewer Castings shall conform to the Standard Detail Plates. All castings shall be Class 35B or better, in accordance with MnDOT 3321. The words "SANITARY SEWER" or "STORM SEWER" shall be cast on top of each manhole cover in 2 inch letters as applicable.

**C. Precast Concrete Manhole and Catch Basin Sections**

Adjusting rings manufactured from high density polyethylene (HDPE) are approved as an alternate to concrete adjusting rings. HDPE adjusting rings shall be sealed with the product recommended by the manufacturer.

Cast iron manhole adjustment rings as manufactured by Cretex, Inc., Neenah Foundry Company, or approved equal, shall be used on all sanitary manholes for adjustment between the non-wearing course and the wearing course.

Delete CEAM 2621.2.C, Item 3 and replace with the following:

- (3) Sanitary sewer inlet and outlet pipes shall be joined to the manhole with a watertight joint consisting of a rubber boot with a non-magnetic, corrosion resistant steel coupling band or equal.

Add the following new item to CEAM 2621.2.C:

- (7) The base of sanitary manholes shall be cast integral with the bottom section of the manholes unless noted otherwise.

Add the following new paragraph to CEAM 2621.2:



## F. Chimney Seal

The adjusting rings and castings of each sanitary sewer manhole shall be sealed with an approved external rubber shield (Infi-Shield® as manufactured by Sealing Systems, Inc., Gator Wrap, or an approved equal). The seal shall be made of ethylene propylene diene monomer (EPDM) rubber with a minimum thickness of 50 mils. The seal shall meet the requirements of ASTM C-433, F-411, and C-923.

Each band shall have a 2-inch (2") mastic strip on the top and bottom edge. The mastic shall be non-hardening butyl rubber sealant and shall seal to the cone/top slab of the manhole and over the lip of the casing.

An inspection tab shall be secured to the top of the casting frame. In the event that metal casting adjustments are utilized, the inspection tab may be removed after approval from the Engineer.

## G Adjusting Frame and Ring Castings

One-foot sections shall be installed where more than 6 (six) adjusting rings exist, and shall be included in the unit price for the adjustment, without any additional compensation. Minimization of the number of rings by using thicker rings where feasible is required.

Structures shall be adjusted such that they conform to the following requirements:

- a. Manholes and catch basins shall have no more than six (6) nor less than two (2) HDPE adjusting rings and the maximum height of adjusting rings and adhesive shall not exceed twelve (12) inches. HDPE adjusting rings shall be a standard, two (2) inches thick, and manufactured for this specific purpose. The diameter or rectangular dimension shall conform to the type of casting on the structure. HDPE shims and or varied width may be required to match slope and or elevation.
- b. Frame and ring castings shall be set to the designated elevation in a full bed of adhesive. Adhesive between the rings shall be no less than one-third ( $\frac{1}{3}$ ) inch or greater than one-half ( $\frac{1}{2}$ ) inch. **No shims of any type shall be used to set the rings.**
- c. Catch basin castings and adjusting rings shall be HDPE with external chimney seal or adhesive wrap when installed in curbing in accordance with the Standard Detail Plates. Rim elevations shall be set to correspond with the depressed curb as illustrated in the plans. **No shims of any type shall be used to set the rings.**
- d. The final surface elevation of the frame or ring casting shall be three-eighths ( $\frac{3}{8}$ "") to one-half inch ( $\frac{1}{2}$ "") below the adjacent pavement surface elevation, and at-grade in turf areas.
- e. All sanitary sewer manholes shall include an Infi-Shield® or Engineer approved equivalent external manhole chimney seal.

The Contractor has ten (10) calendar days to raise all structures upon completion of the base course paving. Failure to do so shall result in a \$50.00 per structure reduction in the Contractor's partial payment. The Contractor shall remain responsible for the adjustments. Repeated failure to complete this item before the winter season shall be considered failure to perform and appropriate action will result.

The Contractor has forty-eight (48) hours to install the wear course paving after adjusting structures for the wear course paving, this time frame includes overlay projects. During the interim period between adjusting structures for the wear course paving and installing the wear course paving, the Contractor shall place traffic cones or other traffic barricades on the adjusted structures.

If the Contractor is unable to adjust the frame and ring casting using HDPE adjusting rings then the Contractor shall adjust the entire existing frame and ring casting at no additional cost. This shall include all necessary pavement removal, saw cutting, bituminous patching, bituminous tack coat, and concrete adjusting rings as required to adjust each casting.

## **H Reconstructing In-Place Structures**

Reconstructing existing structures shall include necessary sawcutting and removing of the existing manhole section as specified by the Engineer, removing the existing casting, installing the necessary concrete manhole section to meet the required elevation for the finished pavement section, and shall include furnishing, installing, and adjusting each casting assembly as shown on the plans or as directed by the Engineer for each reconstructed manhole.

### **2506.3 (CEAM 2621.3) CONSTRUCTION REQUIREMENTS**

The provisions of CEAM 2621.3 are modified and/or supplemented with the following:

#### **B. Appurtenance Installations**

It is the Contractor's responsibility to verify the type and quantity of casting assemblies prior to ordering materials.

The final surface elevation of the frame or ring casting shall be  $\frac{1}{2}$  in below the adjacent pavement surface elevation and at-grade in turf areas unless noted otherwise.

Add the following new paragraph to CEAM 2621.3.B:

##### **B.1 Chimney Seal**

All chimney seal installation shall be performed in accordance with the manufacturer's recommendations. The Contractor shall be required to perform the installation of the first chimney seal in the presence of the Engineer to verify that the installation is acceptable and in accordance with the manufacturer's recommendations.

#### **D. Manhole and Catch Basin Structures**

For shallow structures, the Contractor may furnish precast structures with additional depth as necessary for pre casting, not to exceed a maximum of 2 ft deeper than the plan design build. The additional depth of manhole shall be filled with grout to match elevations of proposed pipe inverts.

Steps shall be aligned over the downstream side of the manhole and be:

- 1 in plus or minus horizontal alignment
- 1 in plus or minus vertical alignment with 16 in spacing

Catch basins under curb and gutter shall be installed to an alignment deviation of less than 0.20 ft with the top slab centered over the base. Deviations greater than 0.2 ft shall be corrected by the Contractor by moving the base to its proper location. All grade stakes involved must be saved by the Contractor. If a catch basin location must be adjusted and the grade stake shows the Contractor to be in error or the grade stake has been destroyed, the Contractor must make the correction at their expense.

All manholes must be protected or covered with plates, castings, or other approved materials at all times during construction to prevent sediment from entering the system. Sanitary manholes shall be covered to also prevent rainwater from entering the sanitary sewer system. This is included in the construction of the structure.

When installing a new structure within an existing pipe network, the Contractor shall verify the structure location, invert elevation and line of any existing opening to ensure the installation of the proposed sewer facility can be constructed according to the plan requirements. The Contractor shall immediately inform the Engineer of any deviation from the plan requirements necessitated by existing conditions. The Contractor shall ensure that upon completion of the connection that the area of the connection be water tight. The Contractor shall ensure smooth even flow from the newly connected pipe to the invert of the existing structure.

The height of the cast iron adjustment ring shall be determined so as to create the required 0.04-foot sump at each manhole and still maintain the required wear course thickness. A 1/4-inch bead of EBS Super Glue adhesive, or approval equal, shall be placed around the entire rim of the existing casting prior to placement of the adjustment ring. The existing casting shall be cleaned according to the adhesive manufacturer's recommendations.

All surplus excavated materials not required for backfill shall be disposed of by the Contractor at no expense to the Owner and in a manner satisfactory to the Engineer. All costs associated with the disposal of the surplus excavated materials are considered incidental to the pay item.

#### **2506.4 (CEAM 2621.4) METHOD OF MEASUREMENT**

The provisions of CEAM 2506.4 are modified and/or supplemented with the following:

Delete CEAM Paragraph 2621.4.B and replace with the following:

##### **B. Manholes**

Manholes will be measured by length in accordance with MnDOT 2506.4.A unless noted otherwise. Where manholes are measured by length, the casting assembly will be measured separately by each, in accordance with MnDOT 2506.4.C

Delete CEAM Paragraph 2621.4.C and replace with the following:

##### **C. Catch Basins**

Drainage structures of each design designation will be measured in accordance with MnDOT 2506.4.A unless noted otherwise.

In accordance with MnDOT 2506.4.C, where drainage structures are measured by length, the casting assembly will be measured separately by each. No separate measurement for casting assemblies will be made where drainage structures are measured as a unit.

##### **H. Appurtenant Items**

Chimney seals shall be measured by the number of each chimney seal provided and installed.

Add the following new paragraph to CEAM 2621.4:

##### **I. Adjust Frame and Ring Casting**

Measurement for adjustment of frame and ring castings shall be for existing castings that are adjusted in preparation for bituminous wear course placement or curb and gutter placement. Initial casting placement after base course construction, installation of new castings on catch basins or structures, or installation of any castings in areas outside of the bituminous roadway surface shall be considered included with the casting and/or manhole structure pay item.

The final raising of manhole castings (new and existing) shall be considered incidental including, but not limited to, the ductile iron manhole adjustment rings and required adhesives, for those manholes where they are allowed, as described above. In the event of numerous manhole adjustments (weather, end of season, etc.), no direct payment will be made.

##### **J Reconstructing In-Place Structures**

Reconstructing in-place structures and manholes will be made by the each. This item shall include compensation in full for all materials, labor, and equipment required to set the furnished and installed castings on reconstructed structures to the required elevation for new pavement surface, including multiple adjustments to suit blacktop lifts.

## 2506.5 (CEAM 2621.5) BASIS OF PAYMENT

The provisions of CEAM 2621.5 are modified and/or supplemented with the following:

Add the following new paragraphs to CEAM 2621.5:

### A. Casting Assembly

Payment for both sanitary sewer and storm sewer castings shall be made under the casting assembly pay item. This item shall include furnishing, installing, and adjusting each new casting assembly and be compensation in full for all materials, labor, and equipment required to set the furnished and install castings on new or existing structures to the required elevation for new pavement surface, including multiple adjustments to suit pavement lifts.

### B. Chimney Seal

The bid unit price for chimney seal by the each shall be compensation in full for all materials, labor and equipment necessary to perform the work.

### C. Construct Sanitary Manhole

The bid unit price for construct sanitary manhole by linear foot, shall be compensation in full for all materials, labor, equipment, casting adjustments, excavation, and backfilling necessary to install the manhole. A separate bid item shall be provided for the casting assembly.

### D. Construct Drainage Structure

The bid unit price for construct drainage structure design special (2 ft x 3 ft) by each, shall be compensation in full for all materials, labor, equipment, casting, casting adjustments, base slab, excavation, and backfilling to install the catch basin. The casting assembly shall be considered included with the drainage structure.

The bid unit price for construct drainage structure by linear foot of each structure design and size, shall be compensation in full for all materials, labor, equipment, casting adjustments, base slab, excavation, and backfilling to install the drainage structure. A separate bid item shall be provided for the casting assembly.

No separate payment shall be made for connecting to a new drainage structure.

Payment will be made based on the following schedule:

| <u>Item No.</u> | <u>Item</u>                                  | <u>Unit</u> |
|-----------------|--|-------------|
| 2506.502        | CASTING ASSEMBLY                             | EACH        |
| 2506.502        | ADJUST FRAME & RING CASTING                  | EACH        |
| 2506.503        | CONST DRAINAGE STRUCTURE DES 48-4020         | L F         |
| 2506.602        | CONST DRAINAGE STRUCTURE DESIGN SPEC (2'X3') | EACH        |
| 2506.602        | CHIMNEY SEAL                                 | EACH        |
| 2506.602        | CASTING ASSEMBLY (SANITARY)                  | EACH        |
| 2506.602        | RECONSTRUCT DRAINAGE STRUCTURE               | EACH        |
| 2506.602        | RECONSTRUCT MANHOLE (SANITARY)               | EACH        |
| 2506.603        | CONSTRUCT 48" DIA SAN MANHOLE                | L F         |
| 2506.603        | CONSTRUCT 8" OUTSIDE DROP                    | L F         |