

**PART 2  
STANDARD SPECIFICATIONS  
FOR EARTHWORK**

**CITY OF ONALASKA, WISCONSIN**

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## **SECTION 201: GRADING**

### **201.1 GENERAL**

Grading shall consist of the loosening, loading, hauling, and disposal of all materials of every description encountered in the performance of the work other than specific materials, which have been classified and bid upon. It shall consist of furnishing and placing materials in accordance with these specifications and as shown on the accompanying cross sections and plans. The work shall be done to the line and grade established by the Engineer.

### **201.2 EXCAVATION**

#### **201.2.1 GENERAL**

This work shall include the removal and disposal of surface and base course and unsuitable materials, the trimming and finishing of the roadway, and maintaining such work in a finished condition until acceptance. All excavation as shown on the accompanying cross-sections and plans shall be done by the Contractor to the line and grade established by the Engineer. All topsoil and organic materials shall be stripped from the project as shown on the cross-sections, and as directed by the Engineer.

Rock excavation shall be defined as removal of igneous or sediment deposits laying in solid beds of layers in their original position which cannot be removed with the types of excavating machinery usually employed for trench excavation of the character involved in this Contract. Rock excavation shall also include removal of boulders larger than ½ cubic yard in volume and of ledge rock, concrete or masonry structures that require drilling or blasting. Rock excavation shall not include removal of boulders less than ½ cubic yard in volume, loose rock, or soft, friable, decomposed rock able to be removed with normal excavation equipment.

The Contractor shall make all major excavations of existing material in the area between the curb line and the property line before curb and gutter is installed.

#### **201.2.2 EXCAVATION AROUND CONCRETE CURB, SIDEWALK, OR DRIVEWAYS**

No mechanical equipment or vehicles will be allowed over or on concrete curb and gutter, concrete sidewalk and concrete driveway aprons for at least seven (7) days after pouring of said structures or until the concrete has attained a compressive strength of 3,000 psi. No mechanical equipment shall be allowed to work within ten (10) feet for a minimum of three (3) days after pouring of said structures or until the concrete has attained a compressive strength of 3,000 psi. Any damage caused by the Contractor shall be removed and replaced at his expense. No material either from or for the area back of the curb line shall be dumped or shoved onto the new bituminous pavement for rehandling by mechanical equipment.

Concrete curb and gutter, concrete sidewalk, concrete driveway aprons and pavements damaged or dislocated in line or elevation or both by the Contractor in his operations of excavating, filling rolling and grading shall be replaced by the Contractor immediately at his expense. The Contractor shall take necessary precautions to protect existing trees in the boulevard. When the trees are to be removed, they shall be so designated by the Engineer and payment made as described under the appropriate bid item.

### **201.2.3 EXCAVATION BELOW SUBGRADE**

The Engineer reserves the right to order additional excavation when conditions of the subsoil require such extra work. The additional excavations shall be measured in the field and calculated from those measurements. Payment for additional excavation shall be made on the basis of the Contract unit price, or by dividing the total bid price by the Engineer's estimated cubic yard quantity. If the subbase has been undercut by the Contractor, except when ordered by the Engineer, then the Contractor shall, at no expense to the City, return the subbase under the roadway, curb and gutter, and sidewalk to the correct grade with crushed aggregate base course, as directed by the Engineer.

### **201.2.4 DISPOSAL OF EXCESS MATERIAL**

Unless otherwise specified, the Contractor shall dispose of all excess excavated material at a site provided by the Contractor at no additional cost to the City. Disposal of excess or undesirable materials shall be subject to approval by the Engineer.

### **201.2.5 MAINTAINING DRAINAGE**

During construction, the roadway, ditches and channels shall be maintained in a well drained condition at all times by keeping the excavation areas and embankments sloped to the appropriate section of the ultimate earth grade. Blading or leveling operations will be required when placing embankments and during the process of excavation except when such excavation is in ledge rock or areas where leveling is not practical or necessary. If it is necessary in the prosecution of the work, to interrupt existing surface drainage, sewers, or under drainage, temporary drainage, approved by the Engineer, shall be provided until permanent drainage work is completed. The construction of all temporary drainage installations shall be considered incidental to the construction of the work.

The Contractor shall be responsible for and shall take all reasonable and necessary precautions to preserve and protect all existing tile drains, sewers and other sub-surface drains or parts thereof, which in the judgement of the Engineer may be continued in service without change. The Contractor shall repair at his own expense any and all damage to such facilities.

### **201.2.6 TOPSOIL**

All excavated slopes or areas and all embankment slopes or areas, designated to be covered with topsoil, shall be undercut or underfilled to the necessary depth to provide for the specified amount of topsoil to be placed and shall be so performed as to avoid removing or loosening any material outside the required slopes, and any such material which may be removed or loosened shall be replaced and thoroughly compacted to the required cross section. Refer to Part 8 for Site Restoration Specifications.

### **201.2.7 GRADING**

All intersection roads, approaches, entrances and driveways shall be graded as shown on the plans or as laid out in the field by the Engineer. The work of constructing intersections and private entrances, trimming shoulders and slopes, finishing and blading the earth subgrade and completing the ditches to proper alignment, grade and cross section shall follow the rough grading closely. Grading operations shall not be performed to the detriment of the work of trimming and finishing the roadway and blading and maintaining the roadbed and earth subgrade.

The grading, trimming and finishing shall be completed prior to construction of the base course. Adjustment in slopes, to avoid injury to standing trees or to harmonize with existing landscape features especially at the intersection of cuts and fills, shall be made and the transition to such adjusted slopes shall be gradual. The crests of earth cut banks shall be rounded as indicated on the plans or directed by the Engineer. All earth slopes shall be constructed to a surface that will merge with adjacent terrain and be in substantial accordance with the cross section. The horizontal serrated condition of slopes ordinarily left by excavating equipment shall be partially smoothed by means of blading or other operations so slopes will have a general contour of the required slope but may be slightly rough or irregular.

During grading operations and pending placement of the base course, the Contractor shall provide continuous maintenance of the entire road bed and perform all blading and repair work necessary to keep the grade smooth and to the required grade and cross section. Washouts caused by erosion shall be refilled with acceptable material and properly compacted.

All earth subbase shall be compacted in accordance with the requirements for Standard Compaction, Section 202.

#### **201.2.8 ROCK EXCAVATION**

Rock, when encountered in excavation, shall be removed to a depth of six (6) inches below the earth subgrade between the outer limits of the shoulder slopes. In the event design details covering the depth of rock excavation are incorporated into the plans, the work shall conform thereto. When excavation methods chosen and employed by the Contractor leave undrained pockets in the rock surface, the Contractor shall, at no expense to the City, properly drain such depressions or, when permitted by the Engineer, fill the depressions with approved impermeable material. Excavation of rock cuts shall be performed by such methods and with such equipment that the resulting backslopes conform to the slopes shown on the plans or to the slopes designated by the stakes set for excavation, without creating depressions in or substantial displacement of material outside the lines, limits or slope planes defined by the stakes. The backslopes in rock cut shall be "scaled" to dislodge loose rock, and material so removed shall be disposed of in a manner prescribed for other excavation. The slopes of rock cuts when designated to receive topsoil shall be undercut the necessary depth to provide for placing the specified amount of topsoil and finished to the required section.

Where rock is encountered, the ditch width shall be narrowed to the minimum width required for laying of the pipe subject to the approval of the Engineer. The pay width for rock excavation shall be the average width of the excavated trench but shall not exceed the outside pipe diameter plus 2 feet. The trench shall be excavated to a point 4 inches below the outside of the pipe barrel and the exterior of all joints.

Volumetric measurement of rock in the trench shall be the basis for determining the quantity of rock excavation and shall be computed from average trench width, top of rock profile, and profile 4 inches below exterior of pipe joints. Boulders in excess of ½ cubic yard volume will be based on actual volume removed from the trench. The pay quantity for rock excavation for manholes and structures will be 1 foot beyond the outside neat lines of the manhole or structure.

If blasting is to be used to remove rock, the Contractor must first obtain a permit from the City of Onalaska.

If the bid proposal includes a bid item for rock excavation, the payment for cubic yards of rock excavation as determined above shall be in addition to the unit bid amount per lineal foot of pipe installed.

If the bid proposal does not include a bid item for rock excavation, payment for rock excavation shall be determined as indicated under Section 14 - Claims for Extra Cost of the General Conditions.

The Wisconsin Administrative Code on Explosives and all local ordinances regulating blasting shall be adhered to. The Contractor will be held responsible for any damage to work performed by others or to adjacent property due to his blasting operation.

#### **201.2.9 EROSION CONTROL**

All areas exposed by earthwork operations shall be subject to Part 7 for Erosion Control Specifications.

#### **201.2.10 CLEANUP**

No project shall be accepted until all access mud, boulevard topsoil or dirt, bituminous material, rocks and crushed stone have been removed from the sidewalk, boulevard, curb heads, gutter and pavement. Workdays shall be charged against until all cleanup is complete and to the satisfaction of the Engineer.

#### **201.3 FILL**

Additional fill material, when brought from off-site or from on-site borrow pits, and if ordered by the Engineer, shall be paid for at the unit price bid.

Fill material shall be deposited, spread and leveled in layers before compacting. Each layer shall be compacted to the degree as specified. The required compaction shall be attained for each layer before any material for a succeeding layer is placed thereon.

Hauling and leveling equipment shall be routed and distributed over each layer of fill in such a manner as to make use of the compaction afforded thereby.

The compaction shall be performed by a means of tamping rollers, pneumatic rollers, vibratory rollers, or other types of equipment, which will produce the required results in the materials, encountered and be subject to the approval of the Engineer.

Tandem or three-wheel rollers, if used on the project, must weigh at least ten (10) tons.

The compaction shall not be performed when the moisture content of the materials is such as to cause excessive displacement or distortion under the compacting equipment. Where such conditions exist, the Contractor shall be required to add moisture or remove moisture by aeration to produce the moisture content necessary for the required compaction of the materials.

#### **201.4 SELECT FILL**

Select fill material, if ordered by the Engineer, shall be hauled in, spread and leveled, then compacted to not less than 95% of its maximum density, as determined by the Modified Proctor Test (ASTM D1557), or as specified in the Special Provisions.

### **201.5 SALVAGABLE CRUSHED AGGREGATE BASE COURSE AND GRANULAR BACKFILL**

Whenever instructed by the Engineer, the Contractor shall salvage by segregating crushed aggregate and granular backfill materials. The salvaged material shall be free of earth and debris. This material shall be reused as Granular Backfill or as directed by the Engineer, at no additional cost to the City.

### **201.6 CLEARING AND GRUBBING**

Clearing and grubbing and tree removal shall consist of cutting and disposing of trees, shrubs, stumps, and boulders of all sizes. The Engineer may order that specific trees or shrubs be saved. Trimming of limbs from trees or trimming of shrubs shall not be done without permission of the Engineer.

All stumps shall be completely removed by excavation under proposed concrete sidewalk, concrete curb and gutter, all types of pavement, permanent structures, and at such other places as directed by the Engineer. Tree stumps under other areas in the right-of-way may be removed with stump cutting machinery to a depth of at least twelve (12) inches below the original ground area in fill areas, and at least twelve (12) inches below the subgrade in cut areas.

The Contractor shall provide a disposal area for all trees, stumps, limbs, brush and vegetation from the project at no additional cost to the City.

Stumps, roots, brush, logs, limbs, and other debris resulting from clearing and grubbing shall not be burned on or near City property without the written permission of the Engineer, and the securing of permits for burning from the proper authorities.

The Contract unit price for Tree Removal shall be diameter inches for complete tree removal. Tree circumference shall be measured 4 feet above the ground and divided by three to obtain units in diameter inches. Payment shall be made only for trees and stumps over 5 inches in diameter.

**END OF SECTION**

## **SECTION 202: COMPACTION**

### **202.1 GENERAL**

This work shall consist of the consolidation and compaction of all materials of every description encountered in the performance of the work in accordance with the Contract Documents.

### **202.2 TYPE 1 COMPACTION**

In general, Type 1 Compaction will be required in areas where additional construction above the material to be compacted will not take place within a one-year period. Unless otherwise required on the plans or in the Special Provisions, existing materials shall be used in Type 1 Compaction conditions.

Where Type 1 Compaction is called for, it may be accomplished by track, rubber tire equipment, or compaction equipment. This equipment shall be routed and distributed over each backfill lift to that the track (or tire) contacts all areas of the surface of the lift. The maximum depth of lift shall be 24 inches. Type 1 Compaction shall be compacting the backfill material to 90% of its maximum density, as determined by the Modified Proctor Test (ASTM D1557).

### **202.3 TYPE 2 COMPACTION**

Where Type 2 Compaction is called for, it shall consist of compacting the backfill material to 95% of its maximum density. Unless otherwise noted, material placed as fill which is at a depth of three (3) feet or greater below the finished subgrade, shall be compacted to not less than 90% of its maximum density. Materials placed as fills in Type 2 Compaction zones shall consist of a granular content unless otherwise approved by the Engineer.

The maximum density shall be determined in accordance with the Method of Test for the Mixture-Density Relations of Soils, ASTM Designation: D1557, Method D, with the replacement of the fraction of material retained on the 3/4-inch sieve with No. 4 to 3/4 – inch material. The density of compacted material shall be determined in accordance with the Method of Test for density of Soil-In-Place by the Sand-Cone Method, ASTM Designation: D1556 the test for Density of Soil and Soil Aggregate in Place By Nuclear Methods, ASTM Designation: D2922, or other approved methods.

The maximum compaction lift for backfill material shall be 12 inches unless the Contractor can prove to the satisfaction of the Engineer that the compaction of deeper lifts than this can meet the above requirements.

Compaction around structures (sanitary and storm sewer manholes, inlets, water valve manholes, valve boxes, etc.) shall be accomplished by means of a hoe pack or other Engineer approved method. Unless otherwise called for in the Contract Documents all compaction of fill material shall be Type 2 Compaction.

### **202.4 PAYMENT**

The cost of providing the compaction as called for in the Contract Documents shall be included by the Contractor in his various unit prices and, therefore, he shall not be paid separately.

When original material is not acceptable, and other backfill material is required by the Engineer, this material shall be paid for at the unit price bid and shall include Type 2 Compaction.

**END OF SECTION**

## **SECTION 203: PAVEMENT REMOVAL**

### **203.1 DESCRIPTION**

Removal of existing pavement, sidewalk and curb and gutter shall include the removal and disposal of all types of roadway surfacing including concrete pavement, brick pavement, bituminous surfacing, existing stone or gravel base regardless of the depth or type; removal and disposal of curb and gutter and the removal and disposal of sidewalk as called for in the Contract documents.

### **203.2 CONSTRUCTION METHODS**

In removing existing pavement, the pavement shall be saw cut to a true line with a face perpendicular to the surface of the existing structure at the locations called for on the plans. Existing sidewalk and existing curb and gutter shall be removed to an existing joint or saw cut as specified by the Engineer.

The Contractor shall not use a frost ball or similar type of equipment to break up the existing pavement, sidewalk, and curb and gutter. The type of equipment used to break up the existing sidewalk, pavement, and curb and gutter shall be of a type that will not damage the existing underground utilities and shall be subject to the approval of the Engineer.

All removed pavement, sidewalk, curb and gutter, and other demolition material shall be removed, transported and disposed of by the Contractor at a suitable site at his cost.

### **203.3 PAYMENT**

Pavement removal shall be measured by the area in square yards or by the linear foot, irrespective of the depth or number of courses encountered. Curb and gutter removal may be classed as removing pavement and be included and measured by area in square yards, or it may be measured and paid for at the linear price bid, depending on how the Contract Bid Proposal reads.

Sidewalk removal shall be measured by the area in square yards irrespective of the depth of the walk.

The Contract unit price for pavement removal (including curb and gutter) and sidewalk removal measured as provided for above shall be payment in full for breaking down, removing and disposal of the removed material and for the furnishing of all labor, tools, equipment and incidentals necessary to complete the item of work in accordance with the Contract documents.

**END OF SECTION**

## **SECTION 204: ABANDONED STRUCTURES**

### **204.1 GENERAL**

This work shall consist of removing, wholly or in part, manholes, catch basins, inlets or other structures; the removal of base course and pavement as necessary in the removal; the salvaging and/or disposing of the resulting materials and backfilling the resulting excavation; bulkheading and abandoning lines in the structure, all as called for on the plans or as directed by the Engineer.

### **204.2 CONSTRUCTION METHODS**

Abandoned manholes and catch basins shall be removed to a depth of three (3) feet below the proposed or existing street grade, whichever is lower, and filled with sand compacted to a Type 2 compaction. All castings on such abandoned structures are the property of the City of Onalaska and shall be salvaged by the Contractor and delivered to the City Shop, by the Contractor.

All inlets to and outlets from existing manholes shall be permanently bulkheaded or as otherwise called for in the Contract documents.

Service shall be maintained in such sewers until the Engineer orders the bulkheads placed and the manholes and catch basins abandoned.

### **204.3 PAYMENT**

Abandoned manholes and catch basins shall not be paid for separately, but shall be considered incidental to other bid items. Any necessary pouring of bulkheads for outlet or inlet pipes, whether called out on the plans or not, shall be considered incidental to other bid items unless specified otherwise in the contract.

**END OF SECTION**