

STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION  
CITY OF MANITOWOC, WISCONSIN

SECTION 700

LANDSCAPING

<u>Section Number</u>	<u>Title</u>
701	GENERAL
702	MATERIALS SPECIFICATIONS
703	CONSTRUCTION STANDARDS AND METHODS

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CITY ENGINEER'S  
APPROVAL \_\_\_\_\_

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## **701 - GENERAL**

### 701.1 Scope of Work

The work under this section shall consist of furnishing all labor, equipment, materials, tools, supplies, supervision, incidentals, utilities, and transportation to complete all work of landscaping in accordance with the plans and specifications for the project.

### 701.2 Associated Sections of These Specifications

The Contractor is advised that associated work is covered in other sections of this document and he shall be familiar with all applicable standards required for the work. While not all inclusive, the Contractor is especially advised to be familiar with the sections on Earthwork, Grading and Graveling, Erosion and Sediment Control, and Traffic Control.

### 701.3 Material Source

The source of materials for use on the project shall be subject to the approval of the Engineer.

## **702 - MATERIAL SPECIFICATIONS**

- 702.1 Topsoil Materials  
Topsoil materials shall conform to the requirements of Section 625.1 through 625.3.3 of the D.O.T. Specifications.
- 702.1.1 Topsoil  
Topsoil shall consist of natural loam, sandy loam, silty loam, silty clay loam, or clay loam humus-bearing soils adapted to the sustenance of plant life and such topsoil shall be neither excessively acidic nor excessively alkaline.
- 702.1.2 Salvaged Topsoil  
Salvaged topsoil shall consist of natural loam, sandy loam, silty loam, silty clay loam, or clay loam humus-bearing soils available from the overlying portion of the area indicated by the plans or specifications to be excavated for the proposed work.
- 702.1.3 Pulverized Topsoil  
Pulverized Topsoil shall conform to Section 702.1.1, shall be free of lumps, any stones in excess of 1/2" (and less than 2% total volume shall be non-organic), and other foreign material, or roots, stumps, weeds, brush or leaves, and shall be used when directed by the Contract Documents or by the Engineer when not specified, topsoil shall be a minimum of 3" deep.
- 702.1.4 Screened Topsoil  
Screened topsoil shall conform to Section 702.1.1, 100 percent of the topsoil passes the one 1" (25 mm) sieve and 90 percent passes the No. 10 (2.00 mm) sieve. Screened Topsoil shall be used when directed by the Contract Documents or by the Engineer when not specified, topsoil shall be a minimum of 3" deep.
- 702.2 Seed  
All seed mixtures shall meet the requirements of Sections 630.2.1.2 and 630.2.1.3 of the D.O.T. Specifications as to purity, germination, and inoculation. The Contractor shall supply the vendor's certificate to verify that the seed used meets the specifications of the project.
- The selection of the seed mixtures, for use on the project shall meet with the approval of the Engineer and shall be in accordance with the following:
- Seed mixture number 30 may be permitted by the Engineer for use for all slopes, ditches, and nonlandscaped graded areas, except those areas affecting existing lawns.
- Seed mixture number 40 shall be used for all areas where existing lawns are affected by the work, parkways, and where a lawn type turf is desired.
- Other seed mixtures may be specified in the Contract Documents for specific projects.

The seed shall be as specified and delivered to the project site in tagged and labelled bags to show the percentage of purity and germination. The seed shall have been tested within one (1) year prior to the date of seeding and shall conform to the latest State and Federal seed laws.

All grass seed shall be fresh, clean, new-crop seed. Grass seed shall not have been exposed to weather prior to delivery to the project site, and after delivery, until used, it shall be completely protected from the weather at all times. It shall not be stored in direct contact with the ground, or in areas of excessive heat or cold.

702.3 Mulch

702.3.1 Straw Mulch

Straw mulch shall consist of straw material meeting the requirements of Section 627 of the D.O.T. Specifications.

702.3.2 Excelsior Mulch

Excelsior material shall meet the requirements of Section 627 of the D.O.T. Specifications.

702.3.3 Wood Chips

Wood chips shall consist of material which is at least ninety (90%) percent hardwood chips having average dimensions of one-quarter (1/4") inch to one-half (1/2") inch thick and two (2") inch to three (3") inch surface area.

702.4 Fertilizer

Contractor shall refer to Section 629 of the D.O.T. Specifications.

Fertilizers for use in connection with placing seed or sod shall be standard, commercially packaged or bulk products in granular or liquid form conforming to the latest requirements of State of Wisconsin and Federal laws. All fertilizers shall be in such physical condition to assure uniform, even application over all areas to be fertilized and seeded.

Fertilizers shall be delivered to the project site in original, unopened packages or containers, each plainly marked with the manufacturer's guaranteed analysis of the contents. Fertilizers shall meet the following minimum requirements:

Nitrogen, not less than	10%
Phosphoric Acid, not less than	10%
Potash, not less than	10%

**Sum of nitrogen, phosphoric acid, and potash shall not be less than thirty (30%) percent.**

Fertilizer shall not have been exposed to weather or damage of any kind prior to delivery to the project site, and after delivery, until used, shall be completely protected at all times. Any fertilizer, which becomes unsuitable for use, for whatever reason, will not be accepted.

702.5

Water

Water shall be potable.

702.6

Hydro Seeding

The materials used in hydro seeding shall comply with the materials specified under Sections 702.2, 702.3, 702.4, and 702.5 of these Standard Specifications.

702.7

Sod

The sod shall consist of a dense, well-rooted growth of permanent and desirable grasses, indigenous to the general locality where it is to be used, and shall be practically free from weeds or undesirable grasses. At the time the sod is cut, the grass on the sod shall have a length of approximately two inches (if longer, the grass shall be cut to approximately this length) and the sod shall have been raked free from debris.

The sod shall be cut in uniform strips approximately eighteen by seventy-two (18" x 72") inches, but no longer than is convenient for handling and transporting. Wider sod rolls are acceptable for large area work.

The thickness of the sod shall be as uniform as possible, approximately three-quarter (3/4") inch or more, depending on the nature of the sod, so that practically all of the dense root system of the grasses will be retained, but exposed, in the sod strip and so that the sod can be handled without undue tearing or breaking.

In the event the sod which is to be cut is in a dry condition so as to cause crumbling or breaking during cutting operations, the Contractor at his own expense shall, at least 12 hours before cutting the sod, apply water to it in sufficient quantities to provide a well moistened condition of the sod to the depth to which it is to be cut.

702.8

Trees and Shrubs

All trees and shrubs shall conform to the species, variety and size as specified in the Contract Documents.

- 702.9      Pressure Treated Landscape Timbers  
Landscape Timbers are to be pressure treated 6" x 8" x 8' No. 2 SFS Southern Yellow Pine. All timbers are to be from heartwood with no more than twenty (20%) percent sapwood. Timbers are to be treated with safe environmentally non-toxic treatment materials such that they meet WIDOT 507.2.2.6 for "Ground Contact Use".
- Hot dipped galvanized nails and/or fasteners shall be used to secure timbers.
- Any surface of the timbers which has been cut in the field, or shop, which has not been pressure treated shall be swabbed with the pressure treatment preservative noted in the special provisions, prior to installation.
- No existing timbers shall be salvaged from the project. All timbers required for the project shall be new and shall conform to these specifications.
- 702.10      Filter Fabric  
Filter Fabric shall conform with Section 645 of the State of Wisconsin Standard Specifications for Highway and Structure Construction.
- 702.11      Brickpavers  
Brickpavers shall not be allowed unless prior written consent of the Engineer is granted. Pavers shall conform to the following standards.
- 702.11.1      Cementitious Materials  
Materials shall conform to the following applicable ASTM Specifications:
- 702.11.1.1      Portland Cements  
Specification C 150, for Portland Cement.
- 702.11.1.2      Blended Cements  
Specification C 595, for Blended Hydraulic Cements.
- 702.11.1.3      Hydrated Lime, Type S  
Specification C 207, for Hydrated Lime for Masonry purposes.
- 702.11.1.4      Pozzolans  
Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement concrete.
- 702.11.2      Aggregates  
Aggregates shall conform to the following ASTM Specifications, except that grading requirements shall not necessarily apply:
- 702.11.2.1      Normal Weight  
Specification C 33, for Concrete Aggregates.

702.11.2.2 Lightweight  
Specification C 331, for Lightweight Aggregates for Concrete Masonry Units.

702.11.3 Other Constituents  
Air-entraining agents, coloring pigments, integral water repellents, finely ground silica, etc., shall be previously established as suitable for use in concrete and either shall; conform to ASTM Standards where applicable, or shall be shown by test or experience not to be detrimental to the durability of the concrete.

702.11.4 Physical Requirements

702.11.4.1 Strength and Absorption Requirements  
At the time of delivery to the work site the units shall conform to the physical requirements prescribed in Table 1 below.

TABLE 1

	COMPRESSIVE STRENGTH, PSI (MPA)		WATER ABSORPTION % BY DRY WEIGHT	
	MIN	MAX	MIN	MAX
FREEZE -THAW	8000 (55)	7200 (50)	5	7
NON FREEZE -THAW	6000 (42)	5400 (38)	8	10

702.11.4.2 Durability  
The Contractor shall satisfy the Engineer either by proven field performance or the laboratory freeze-thaw test that the paving units have adequate durability if they are to be subjected to a freeze-thaw environment.

702.11.4.2.1 Proven Field Performance  
Satisfactory field performance is indicated when units similar in composition and made with the same manufacturing process as those to be supplied to the purchaser, do not exhibit objectionable deterioration after at least three (3) years. The units used as the basis for proven field performance shall have been exposed to the same general type of environment, temperature range and traffic volume as is contemplated for the units supplied to the purchaser.

702.11.4.2.2 Freeze Thaw Test  
When tested in accordance with Section 8 of ASTM C 67-73, specimens shall have no breakage and not greater than 1.0 percent loss in dry weight of any individual unit when subjected to fifty (50) cycles of freezing and thawing. This test shall be conducted not more than twelve (12) months prior to delivery of units.

702.11.5 Permissible Variations in Dimensions  
Length or width of units shall not differ by more than 1/16" (2mm) from approved samples. Heights of units shall not differ by more than 1/8" (3mm) from the specified standard dimension.

## **703 - CONSTRUCTION STANDARDS & METHODS**

- 703.1      Construction Work Area  
The construction work area shall be as noted on the plans or in the Contract Documents. If not specified, the construction work area shall be the area within the slope easement of the project, which is normally a minimum of five (5') feet beyond the slope intercept point, unless otherwise indicated.
- The Contractor shall be liable for any damage caused beyond the construction work area, as noted above, unless specified otherwise in the special provisions of the project being constructed. Restoration beyond the construction work area shall not be a pay item.
- 703.2      Phasing of Work  
The landscaping of the project shall be scheduled so as to not be damaged by other types of work under the project.
- 703.3      Damage By The Contractor  
Except as otherwise directed by the Engineer, the Contractor shall be responsible for the restoration of all areas outside the construction work area of the contract. This shall include, but shall not be limited to; lawn, pavement, sidewalk, curb and gutter, utilities, trees and other vegetation, to previous condition including size, species, variety, etc..
- Any damage that causes a complaint to be registered against the Contractor shall require a written release from the complainant prior to final payment of the contract. The Contractor shall be responsible for negotiating and obtaining the written release.
- 703.4      Traffic Control  
The Contractor shall be responsible for maintaining traffic, both vehicular and pedestrian, within the project area unless otherwise specifically stated in the special provisions. The Contractor shall provide adequate traffic control devices in conformance with Section 900 on Traffic control in these Standard Specifications.
- 703.4.1      Basis of Payment  
The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, install, and maintain the traffic control devices required for the project.
- 703.5      Erosion and Sediment Control  
The Contractor shall be responsible for the installation and maintenance of erosion and sediment control devices for the project. Erosion and sediment control shall conform to Section 800 on Erosion and Sediment Control in these Standard Specifications.

- 703.6        Staking  
All staking for the project shall conform to Section 203 of these Standard Specifications.
- 703.7        Disposal of Waste Materials  
The Contractor shall properly dispose of all waste materials from the project. See Section 210 of these Standard Specifications regarding proper disposal of waste materials. All waste materials are property of the contractor unless specifically stated otherwise in the Contract Documents.
- 703.7.1      Basis of Payment  
The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to load, transport, and dispose of the waste materials, as required by the project.
- 703.8        Protection of The Work  
The Contractor shall be responsible for providing adequate signing and barricading and any supports necessary to protect the work from damage from acts of nature as well as vandalism and to assure the safety of workers and the general public in daylight and in nightfall until acceptance by the Owner. This shall include, but shall not be limited to, barricades, fencing, mulch, matting, or other devices that will restrict access to the area of the work.
- 703.9        Clearing and Grubbing  
Clearing and grubbing shall conform to the requirements in Section 300 - Earthwork, Grading and Graveling of these Standard Specifications.
- 703.10       Unclassified Excavation  
Unclassified excavation shall conform to the requirements in Section 300 - Earthwork, Grading and Graveling of these Standard Specifications.
- 703.11       Roots
- 703.11.1     Root Removal  
The Contractor shall exercise care to assure that tree trunks, limbs, and root systems are adequately protected and are not unnecessarily damaged by operation.
- When work on the project requires the work to be immediately adjacent to an existing tree, the area of the work shall be carefully excavated, prior to cutting the roots. Roots shall be cut not more than four (4") inches outside the proposed work, on the tree side of the work. Root barrier should be used when necessary to assure future damage to infrastructure does not occur.
- The Contractor shall remove the root system on the work side of the tree, to allow for the execution of the required work. The Contractor shall not remove roots more than six (6") inches below the proposed work without prior review and approval of the Engineer.

The Contractor shall be aware of the extent of root removal. Prior to removing roots from two sides of a tree, he shall consult with the Engineer.

Exposed tree roots shall be covered with mulch and watered, from the time of exposure of the roots, until the area is properly backfilled.

The root foundation must remain adequate to withstand heavy windstorms. It is for this reason that depth and extent of root removal shall be minimized, as much as possible.

Roots shall be cut by use of sharp hand implements only, these include chain saws, ax, loppers, etc.. Mechanical root cutting machines shall not be used unless specifically approved by the City Engineer, prior to construction. Bucket mounted rippers, or other methods which do not provide a clean cut will not be allowed.

703.11.1.1

Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to cut, prune, and dispose of the roots as required by the project.

703.11.2

Root Pruning

When roots are found to be in the way of the work, they shall be properly pruned to prevent damage to the trees root system.

Prior to pruning the roots, the Contractor shall contact the Engineer to review the proposed pruning methods and inspect the work sites if necessary.

Root pruning shall only be preformed on one side of the tree, at a time, either the sidewalk side or the curb side, but not both at the same time. The roots shall be severed at the edge of the proposed work. All roots must be cleanly cut with an ax, chain saw, loppers, or other method approved by the City Engineer. All severed roots shall be removed and properly disposed of prior to continuing with the work.

The Contractor shall take care, not to damage unsevered roots below subgrade.

703.11.2.1

Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to prune, and dispose of the roots as required by the project.

703.12

Damage Assessment of Landscape Materials

Damage to trees due to the Contractor's negligence, will be repaired by the City and the cost of said repairs (or replacement with similar size, species, variety, etc.) will be assessed against the Contractor prior to final payment.

Tree damage appraisals and diminution of tree value, shall be determined in accordance with the latest revision of "A Guide To Professional Evaluation of Landscape Trees, Specimens, Shrubs, and Evergreens" as published by the International Society of Arboriculture. Any loss of value, as determined by the City, shall also be assessed against the Contractor prior to final payment.

703.13 Tree Removal

Unless stated otherwise in the Contract Documents, the City will attempt to anticipate the need to remove any problem street trees within the project limits as shown on the plans or in the special provisions.

When the plans or specifications indicate that the Contractor is to remove the trees, the Engineer will mark the trees to be removed when requested to do so by the Contractor.

703.13.1 Method of Measurement

The method of measurement will be per inch diameter (at four (4') feet above the ground), per station, or lump sum as noted in the Contract Documents. Only the in place trees with diameters of 3-inches or larger will be included in these measurements, all others will be considered incidental to the unit price bid per inch diameter of "Clearing."

703.13.2 Basis of Payment

The basis of payment shall be as measured above and shall be paid for per the Contract Lump Sum or Unit Price bid for Tree Removal. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to remove and properly dispose of the trees as required by the project, including stumps and roots of the trees to be cleared.

703.14 Stump Removal

Should the Contractor encounter an existing large stump (>12") within the project area during excavation, which is not shown on the plans, the Contractor shall remove the stump as directed by the Engineer. Costs for removing the stump shall be paid per unit price bid per inch diameter "Grubbing" or per Schedule of Fixed Prices.

703.15 Intentionally Left Blank – For Future Use

703.16 Topsoil Work

703.16.1 Topsoil

This work shall consist of the furnishing, hauling, placing on finished subgrade, compacting, as well as leveling, and preparing for seeding or, of humus bearing soil, meeting the requirements of Section 702.1 of these Standard Specifications, from locations furnished by the Contractor beyond the limits of the project, all as shown on the plans, required by the contract, or directed by the Engineer.

The Contractor shall compact the placed topsoil with appropriate equipment to provide a uniform and stable bed for the placement of seed or sod.

- 703.16.1.1 Method of Measurement  
The method of measurement will be per square yard for topsoil.
- 703.16.1.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Topsoil. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required for excavating, loading, hauling, placing, undercutting of excavation or under filling of embankments, leveling, and preparing for seeding.
- 703.16.2 Salvaged Topsoil  
This work shall consist of removal of the available topsoil from the construction work area of the project, in amounts and to such depths as available, or necessary to cover the project area following completion of other construction activities. It shall include, but shall not be limited to the removal, hauling, stockpiling, placing on finished subgrade, as well as leveling, compacting, and preparing for seeding, all as shown on the plans, required by the contract, or directed by the Engineer.
- 703.16.2.1 Method of Measurement  
The method of measurement will be per square yard for Salvage Topsoil.
- 703.16.2.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Salvage Topsoil. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required for removing, stockpiling, reclaiming, hauling, placing, leveling, and preparing for seeding, including any erosion control devices required for the stockpile area.
- 703.16.3 Pulverized Topsoil  
When directed by the Contract Documents, or the Engineer, the Contractor shall utilize pulverized topsoil meeting the requirements of Section 702.1 of these Standard Specifications.
- 703.16.3.1 Method of Measurement  
The method of measurement will be per square yard for Pulverized Topsoil.
- 703.16.3.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Pulverized Topsoil. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to excavate, load, and haul, and for placing, compacting, and undercutting of excavation
- 703.16.4 Screened Topsoil  
When directed by the Contract Documents, or the Engineer, the Contractor shall utilize screened topsoil meeting the requirements of Section 702.1 of these Standard Specifications.

- 703.16.4.1 Method of Measurement  
The method of measurement will be per square yard for Topsoil.
- 703.16.4.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Screened Topsoil. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to excavate, load, and haul, and for placing, compacting, and undercutting of excavation or under filling of embankments, leveling, and preparing for seeding.
- 703.16.5 Topsoil, Seed, Mulch, Fertilize and Water  
Topsoil may also be included as a bid item with fertilizing, seeding, mulching, and watering, in which case;
- 703.16.5.1 Method of Measurement  
The method of measurement will be per square yard for topsoil, fertilizer, seeding, mulching and watering.
- 703.16.5.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Topsoil, Fertilizing, Seeding, Mulching, and Watering. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required for excavating, loading, hauling, placing, undercutting of excavation or under filling of embankments, leveling and preparing the topsoil, fertilizing, seeding, placing and anchoring the mulch, and watering the area for 28 days as needed to keep the ground continually moist. See the following sections for the placing and measuring of the fertilizer, seed, mulch, and watering.
- 703.16.6 Grading and Foundation Preparation For Topsoiling  
All areas designated to be covered with topsoil shall be undercut or under filled three (3") inches, or as required by the plans, special provisions, or the Engineer, so that when covered to the required depth with topsoil, the finished work will be in accordance with the required lines, grades, slopes and cross-sections of the plans.
- All approved topsoil, salvaged from the site, shall be placed within the area designated to be topsoiled prior to new topsoil being utilized.
- No deductions will be made from items of excavation for the quantities of salvaged topsoil material which may be obtained from areas of cut sections, nor will the volumes of salvaged topsoil removed from sites of proposed fill sections be measured for payment or paid for under excavation items, nor will any allowance, adjustment, or measurement for payment under the pertinent excavation items be made for undercutting of cut sections or underfilling of fill sections.

703.17 Fertilizing

703.17.1 Scope of Work

When the contract contains an item of Fertilizer, such work shall, unless otherwise provided, consist of furnishing and incorporating fertilizing material in the soil on areas to be seeded or in the surface of areas to be sodded, all in accordance with the requirements of the specifications.

703.17.2 General

The fertilizer selected for the seeding areas shall be uniformly applied thereon and incorporated into the soil by light discing, or harrowing. Granular fertilizer shall be well pulverized and free from lumps when applied.

Fertilizer shall be applied at a rate of seven (7) pounds per one-thousand (1000) square feet.

When fertilizer is incorporated with topsoiled area, the fertilizer may be applied just prior to, or in conjunction with, the final discing or harrowing operations of the topsoil, or in the event the topsoil is manipulated by hand, just prior to the final raking and leveling.

In the event fertilizer is to be placed on surfaces on which no topsoil is placed, the soil shall be prepared by discing, or harrowing to a minimum depth of three (3") inches and the fertilizer then incorporated as set forth above.

In the event fertilizer is to be placed on seeding areas, where the seed is to be sown by means of hydroseeding, (as only allowed by prior written permission of the Engineer) the required amount of fertilizer may be placed in the tank and mixed together with the water and the seed and applied in the seeding operation. Fertilizer applied by this method will not require discing or harrowing after being placed.

703.17.3 Method of Measurement

The method of measurement will be per square yard for "Fertilizing, Seeding, Mulching, and Watering" or "Fertilizing, Sod, and Watering."

703.17.4 Basis of Payment

The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for "Fertilizing, Seeding, Mulching, and Watering" or "Fertilizing, Sod, and Watering." Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to haul, and place the fertilizer, seed, placing and anchoring the mulch and watering the area as designated on the plans or by the Engineer. See the following sections for the placing of the seed, mulch, and watering.

Topsoil may be included as a bid item with seeding, mulching, fertilizing, and watering, in which case see Section 703.16.4 of these Standard Specifications for the method of measurement and basis of payment for this item.

703.18 Seeding

703.18.1 Scope of Work

Seeding shall consist of preparing seed beds and furnishing and sowing the required seed on the slopes, ditches, parkways, and other graded areas to be seeded.

703.18.2 General

ALL SEED MIXTURES SHALL BE PLACED AT NO LESS THAN TRIPLE THE SPECIFIED APPLICATION RATE IN SECTION 630 OF THE WISCONSIN DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.

Seeding shall be done in seasons extending from April 1 to October 15, when temperatures and moisture conditions are adapted to work of this nature. If seeding is not completed by October 15, e-matt shall be required at no additional compensation to the Contractor. No seeding shall occur outside these dates unless written prior approval is received from the Engineer. Summer seeding between the dates of May 20 and August 15 are at the contractor's risk. Dry and hot weather difficulties are the responsibility of the Contractor.

Grading, shouldering, topsoiling, and fertilizing shall be completed before seeding. Requirements of erosion control may necessitate partial project seeding. The Contractor is responsible for compliance with local and state laws related to timely soil stabilization. No additional payment will be made for extra mobilization for phased work.

The area to be seeded shall be worked with discs, harrows, or other appropriate equipment, until it becomes a reasonably even and loose seed bed, a minimum of three (3") inches deep, immediately in advance of seeding.

The seed mixture shall be sown by means of equipment, or may be scattered uniformly over the areas to be seeded, and lightly raked, or dragged, to cover the seed with one-quarter (1/4") inch to three-eighths (3/8") inch of topsoil. Scattering seed by hand shall be done only with satisfactory hand seeders, and only at such times when the air is sufficiently quiet to prevent seed from blowing away.

After seeding, the area shall be lightly rolled by means of suitable equipment, preferably of the cultipacker type when such equipment can be operated, or by means of light hand tampers. Hydro seeding shall only be used for mulch unless specifically authorized by the Engineer in writing.

703.18.3 Acceptance of Work

Acceptance of the seeded areas by the City shall not take place until there has been a uniform growth to an average height of two (2") inches over the entire project area. Uniform growth shall be defined as not more than five (5%) percent bare area.

703.18.4 Basis of Payment  
The cost of this item shall be included in the Contract Unit Price bid for Fertilizing, Seeding, Mulching, and Watering, or Topsoil, Seed, Mulch, Fertilize & Water, unless specifically stated otherwise in the Contract Documents. Said unit price shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, place the seed, and maintain the seeded area as required for the project. See Section 703.16.4 for the method of measurement and basis of payment for this item.

703.19 Mulch

703.19.1 Scope of Work

This work shall consist of furnishing, placing, anchoring, and maintaining a mulch cover on surfaces of such portions of the project where indicated by the plans and specifications or as directed by the Engineer.

The Contractor shall be responsible for the placing of the mulch in such a manner as to prevent the scattering of the mulch by the effects of wind, and/or weather. In the event the mulch is scattered for any reason, prior to acceptable growth of the grass, the Contractor shall replace it without damaging the existing seed bed, and at no additional cost to the Owner. Hydro mulching will be permitted as an alternative to hand spreading mulch.

703.19.2 Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for Fertilizing, Seeding, Mulching, and Watering, or Topsoiling, Seeding, Mulching, Fertilizer & Watering, unless specifically stated otherwise in the Contract Documents. Said unit price shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, and place the mulch and maintain the seeded area as required for the project. See Section 703.16.4 for the method of measurement and basis of payment for this item.

703.20 Watering

703.20.1 Scope of Work

This item shall consist of the watering of landscaping, plantings, grass, and sod to assure adequate moisture for initial growth and root development.

703.20.2 General

Upon completion of topsoiling, fertilizing, seeding, and mulching, or fertilizer and sod the Contractor shall water the entire area that was seeded or sodded. Watering shall be adequate to saturate the topsoil to a depth of one and one-half (1 1/2") inches.

Water shall be furnished and applied by the Contractor. The City Water Utility may permit the use of hydrant connections, however the Contractor shall make all arrangements, abide by any Utility requirements, and pay any fees to the Utility.

The Contractor shall, in addition to the initial watering, continue to water the area at least twice a week for a minimum of four (4) weeks if sufficient rainfall is not received. Sufficient rainfall shall be defined as a minimum of one (1") inch per week, or intermittent rainfalls of one-quarter (1/4") inch, or more, for three (3) of the seven (7) days per week.

The Contractor, for New and Remove and Replace Sidewalk projects, is mandated to provide door hangers which shall spell out that the area has been seeded and/or sodded, and the property owner is responsible to provide adequate (daily) watering to encourage grass germination and to discourage weeds. If weeds take over, it shall be the property owner's responsibility to control them.

703.20.3

Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for Fertilizing, Seeding, Mulching, and Watering, or Fertilizing, Sodding and Watering, unless specifically stated otherwise in the Contract Documents. Said unit price shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, and apply the water and maintain the restored area as required for the project. See Section 703.16.4 for the method of measurement and basis of payment for this item.

703.20.4

Credit For Watering

If so stated in the Contract Documents for the work, the Contractor shall provide a credit for not watering the project area. This credit would apply if weather conditions included adequate rainfall to negate the need to water at time of seeding and initial growth (see section 703.20.2). This shall not relieve the Contractor of the need to guarantee the growth of plant materials. Under no conditions shall the Engineer prevent the Contractor from watering. This option shall be the Contractor's option only, but will require the consent of the Engineer based on project conditions.

703.20.4.1

Basis of Payment

Unless stated otherwise in the Contract Documents, this credit shall be negotiated at time of construction, prior to final payment.

703.21

Hydro Seeding and Watering

703.21.1

Scope of Work

This work shall consist of sowing or spreading upon the prepared seed bed, by means of a spray or stream of water under pressure operated by an approved type of machine designed for that purpose, the seed, mulch, and fertilizer, as required by the Contract Documents.

703.21.2

General

Hydro seeding will only be permitted in lieu of Fertilize, Seed, and Mulch by specific written permission of the Engineer. Hydro Seeding shall conform to Section 630.3.3.2 Method "B" of the D.O.T. Specifications, with the addition of Fertilizer and Mulch material.

Seed, mulch and fertilizer shall conform to the materials section, Section 702,

of these Standard Specifications.

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703.21.3 Basis of Payment  
This item is offered as an alternate to fertilize, seed, and mulch and water, and therefore the cost of this item shall be included in the Contract Unit Price bid for Fertilize, Seed, and Mulch and Water. Said unit price shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required for the work.

703.22 Sodding and Watering

703.22.1 Scope of Work  
This work shall consist of the furnishing and laying of live sod at the locations as designated. All work shall be as indicated on the plans or in the Contract Documents or as directed in the field by the Engineer and shall be in accordance with these Standard Specifications.

When specified, reinforced Sodding shall consist of the furnishing and laying of live sod and the furnishing and application of approved netting or fabric to the surface of the sod at locations indicated on the plans or in the contract or as directed by the Engineer or by staking of the sod to the subgrade by use of small wooden stakes.

703.22.2 Construction Methods

703.22.2.1 Preparation of the Earth Bed  
The area to be sodded shall have been previously constructed to the required cross section and contour, and the tops and bottoms of the slopes shall be rounded to a minimum four (4') foot radius curve.

The areas to be sodded shall be free from stones, roots or other undesirable foreign material.

The soil on the area to be sodded shall be loosened and brought to a reasonably fine granular texture, to a depth of not less than about one (1") inch, by means of equipment or hand methods adapted to the purpose.

703.22.2.2 Fertilizer  
When the contract contains an item of Fertilizer, areas to be sodded shall, unless otherwise specifically provided, be fertilized as set forth in Section 703.17 of these Standard Specifications.

703.22.2.3 Placing The Sod  
The earth bed upon which the sod is to be placed shall be moistened to the loosened depth, if not naturally sufficiently moist, and the sod shall be placed thereon within approximately twenty-four (24) hours after the same has been cut.

Sod shall be laid so that the joints caused by abutting ends of sod strips are not continuous. Each sod strip shall be so laid as to abut snugly against the strip previously laid.

As the sod is being laid it shall be rolled or firmly but lightly tamped with suitable wooden or metal tampers, sufficient only to "set" or press the sod into the underlying soil.

At points where water will flow over a sodded area, the upper edges of the sod strips shall be turned into the soil below the adjacent area and a layer of earth placed over this juncture. Said layer of earth shall be thoroughly compacted to conduct the surface water over the upper edge of the sod.

At the limits of the sodded area, wherever practical or feasible, the end strips shall be placed to effect a broken line, and ends of the strips shall be turned in and treated as above described.

Frozen sod shall not be placed, nor shall any sod be placed upon frozen soil.

703.22.2.4 Staking

On all slopes steeper than one foot vertical to four feet horizontal the sod shall be staked. The stakes shall be six (6") inches in length and spaced as required by the nature of the soil and steepness of slope. The spacing shall be from eighteen (18") inches to thirty-six (36") apart along the longitudinal axis of the sod strip. Stakes shall preferably be placed near the top edge of the sod strip and shall be driven approximately plumb through the sod, flush with the surface.

All sod placed in ditches, flumes or other appurtenances, where a concentrated flow of water may be expected, shall be staked regardless of the slope.

703.22.2.5 Watering

After staking and cleanup, the sod shall be thoroughly moistened by soaking with water. All sodded area shall be kept thoroughly moist by watering or sprinkling, when rainfall is deficient, for a period of four (4) weeks. Watering shall be in accordance with the requirements of Section 703.20 of these Standard Specifications.

703.22.2.6 Reinforcing Sod

After the sod has been placed, rolled and staked as provided above, the netting or fabric shall be placed over the sod and secured with staples. The netting or fabric shall be placed in accordance with plan details.

At least six (6") inches of the upgrade end of the netting or fabric shall be buried under the downgrade sod at junction slots.

703.22.3 Method of Measurement

The method of measurement will be per square yard of sod installed.

- 703.22.4 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Sodding and Watering. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to prepare the earth bed and to furnish, place, stake, roll, and water the sod in accordance with the Contract Documents.
- 703.23 Trees and Shrubs
- 703.23.1 Scope of Work  
The work under this section consists of furnishing and planting trees, shrubs, and perennials of the species, varieties, and sizes specified at the locations designated in the Contract Documents or as directed by the Engineer. This work shall include furnishing all necessary materials and performing all necessary labor such as excavating plant holes, topsoil backfilling, pruning, watering, fertilizing, staking, disposing of surplus and waste materials, necessary care and required placements pending acceptance, and all other work necessary, or incidental thereto, to complete the requirements of this section in full accordance with the plans and specifications.
- 703.23.2 General
- 703.23.2.1 Plant List  
A complete list of plants, including a schedule of quantities, sizes, and other requirements is shown on the plans or in the Contract Documents. In the event that discrepancies occur between the quantities of plants indicated in the Plant List and on the plans, the plant quantities indicated on the plans shall govern.
- 703.23.2.2 Substitution  
No substitutions shall be accepted, except where evidence is submitted that a specified plant cannot be obtained. Substitution may be made only upon written approval of the Engineer with equitable adjustment of the contract price.
- 703.23.2.3 Quality  
All plants shall be nursery grown within the states of Wisconsin, Minnesota, Iowa, Michigan, or that part of Illinois, Indiana or Ohio located within Zone 5 of the "Plant Hardiness Zone Map" of the United States Department of Agriculture.
- All plants shall be nursery grown for at least two (2) years prior to date of planting on the project.
- All plants shall be typical of their species or variety and have normal, well formed branches and vigorous root systems and shall be free from injurious insects, insect eggs, borers, plant diseases or other plant pests.
- Plants furnished shall be sound, healthy and vigorous and free from the following defects:

1. Serious injuries to top, branches, trunk, bark, or roots
2. Disfiguring knots/shapes
3. Sunscald injuries
4. Dried out roots
5. Prematurely opened buds
6. Thin or poor tops and/or roots systems
7. Evidence of molding
8. Dry, loose or broken ball of earth in B. & B. stock
9. Central leader of trees cut or damaged

703.23.2.4 Grading Standards

Plant stock shall conform to the code of standards set forth in the current edition of American Standard for Nursery Stock recommended for general use and adoption by the American Association of Nurserymen, Inc.

Plant stock shall be dimensioned as it stands in its natural position. When plants are specified in the plant list by a height range, the stock furnished shall be a fair average between the minimum and maximum sizes specified, measured from ground level. When plants are specified by a caliper range, the caliper of the stock, measured diameter at belt height (DBH) above the ground level, shall be a fair average between the minimum and maximum sizes specified.

Plants larger than specified in the plant list may be used, if approved, but use of such plants shall not increase the contract price. Large plants which have been cut back to the specified sizes will not be accepted.

703.23.2.5 Plant Inspection and Legal Requirements

All shipments and deliveries of plant material shall comply with State and Federal laws and regulations governing the inspection, shipping, selling, and handling of plant stock.

703.23.2.6 Plant Names and Labels

The nomenclature used herein and on the plans shall conform to that of the current edition of Standardized Plant Names as adopted by the American Joint Committee on Horticultural Nomenclature.

All plants shall be true to name, with each plant legibly and securely labeled with the name and size of the plant material, as required or specified.

703.23.2.7 Plant Approval

All rejected plants shall be immediately removed from the site and replaced with acceptable plants of the same species, variety, and size, at no additional cost to the City unless otherwise directed in writing by the Engineer.

The Contractor shall furnish a written list of the sources from which he proposed to obtain plant materials for the work. Such a list shall be furnished at least fifteen (15) days prior to the date that such plant materials are to be delivered to the project site.

703.23.2.8 Digging, Handling, and Packing Plant Stock

703.23.2.8.1 General

All plant stock shall be dug and handled with care and skill to prevent injuries to the trunks, branches, and roots, and shall be packed in an approved manner to ensure arrival at the Project Site in good condition.

All plants furnished with earth balls shall be handled by the ball.

703.23.2.8.2 Balled and Burlapped Stock (B. & B.)

Plant stock to be furnished balled and burlapped (B. & B.) shall be moved with a compact dug ball of earth so firmly wrapped in burlap that upon delivery the soil in the ball is still firm and compact about the small bedding roots. Each ball shall be of sufficient size to encompass all the fibrous feeding roots necessary to ensure successful recovery and development of the plant. The minimum sizes of the root balls shall be in accordance with Recommended Balling and Burlapping Specifications, as set forth in the current edition of the American Standard for Nursery Stock sponsored by the American Association of Nurserymen, Inc. Broken, cracked loose, or damaged balls will be rejected.

703.23.2.9 Planting Season

Planting of trees and shrubs shall be done within the following dates:

September 1 to December 1

April 1 to June 1

If special conditions exist, which may warrant a variance in the above planting dates, a written request shall be submitted stating the special conditions and the proposed variance. Written permission for the variance will be given if, in the opinion of the Engineer, the variance is warranted.

No planting shall be done when the ground is frozen deeper than six (6").

703.23.2.10 Delivery and Temporary Storage

Plant stock shall be planted on the day of delivery to the project site. In the event that this is not possible, the plant stock shall be temporarily stored in a well ventilated, cool, moist storage facility and shall be adequately protected against drying by adequately watering and/or misting.

Plants shall not remain unplanted for longer than three (3) days after delivery.

703.23.3 Planting

Plants shall be furnished and planted in accordance with the requirements of the Contract Documents, Section 632 of the D.O.T. Specifications, and the American Standard for Nursery Stock, latest editions.

703.23.3.1 Layout of Planting

The layout of planting and location of plant holes shall be staked out by the Engineer in locations shown on the Plans.

703.23.3.2 Standards For Excavating For Planting Area

The Contractor shall layout an area equal to between two and three times the diameter of the planting ball.

In the center of the prepared area, the Contractor shall dig a shallow hole which to set the tree. The hole should allow the root ball to sit on solid ground rather than loose soil. Once the ball is set in the hole, one-eighth (1/8) of the root ball should be above the existing soil.

After the tree is properly situated, the Contractor shall cut and remove the rope or wires holding the burlap in place and securing any part of the tree. The Contractor shall position the tree so that it is perpendicular to the ground and the main stem is growing straight up.

The Contractor shall backfill around the root area, and gently pack the soil to prevent major air pockets. As an alternative, flooding may be used instead of manual compaction to help the soil settle and prevent overpacking. The Contractor shall rake the soil even over the entire area, and cover it with two (2") to four (4") inches of wood mulch.

703.23.3.3 Topsoil Backfill

All plant holes shall be backfilled with screened topsoil. Topsoil for use in planting shall conform to the requirements for Topsoil contained in Section 702.1 of these Standard Specifications. Trees may be backfilled with native material if acceptable to the Engineer.

Backfill material shall not include objectionable weeds, litter, sod, stiff clay, stones larger than (3/4") inch in diameter, stumps, roots, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. Topsoil shall not be delivered in a frozen or muddy condition.

703.23.3.4 Mulching

The Contractor is responsible for providing and installing all required and specified mulch material. Mulch shall be placed, after all necessary backfilling, watering and adjustment has been performed, within the prepared planting area to a depth of four (4") inches. Mulch shall be placed within one week of planting.

Mulch shall consist of wood chips (hardwood). The wood chips shall be free of injurious insects, insect eggs, borers, plant diseases or other plant pests, branches, and debris.

703.23.3.5 Fertilizer

Fertilizer to be used in plant holes shall be a standard manufactured slow release, water soluble fertilizer contained in one (1 oz.) ounce packets. The amount of fertilizer in each packet shall be stated, by weight, in ounces.

The fertilizer shall meet the following minimum requirements:

Nitrogen	16%
Phosphoric Acid	8%
Potash	16%

Each plant shall be fertilized according to manufacturer's recommended rates.

703.23.3.6

Watering

All plants shall be watered upon completion of planting.

All water required during and after planting shall be provided by the Contractor. The Contractor shall provide his own hoses and/or containers.

Complete watering shall be performed at twelve (12) to fifteen (15) day intervals until the final acceptance of the work under the contract. Dormant tree planting does not require watering.

A sufficient amount of water shall be placed in each plant hole at the time of each watering to keep the backfill material in a moist condition and to keep the plant in a healthy growing condition.

Care must be taken when watering not to wash away mulch and backfilled material. Mulch and backfill material displaced must be immediately replaced by the Contractor.

The Contractor shall notify the Owner one (1) day in advance of all watering.

703.23.3.7

Inspection

A formal inspection of the work will be made by the Engineer within thirty (30) days of the completion of the work under the contract. At this time, any plantings, which, in the judgement of the Engineer, do not conform to specifications, and any plants which are found to not be in a normal healthy condition, will not be accepted.

703.23.3.8

Acceptance and Replacement of Plant Material

Near the end of the first full growing season, but no later than the expiration of the plant guarantee period, an inspection of the plantings (not including trees) unless specifically indicated will be made by the Engineer and only those plants that are alive and normally healthy will be accepted. **Unacceptable material shall be removed and replaced by the Contractor, at his own expense, during the next planting season.**

Material and method of replacement planting shall be the same as specified for the original planting.

**All replacements will be subject to the same one (1) year guarantee period. Only those plants that are alive and healthy will be accepted.**

703.23.3.9

Guarantee

The Contractor shall guarantee the plant material covered under any contract **for a period of one (1) year from the date of acceptance.** Plants which die during the guarantee period shall be removed and replaced under the original specifications, no later than the following planting season, at the Contractor's expense. The Contractor shall be responsible for providing no more than the original plant and two (2) replacements under the guarantee. All replacement

plants shall have a one (1) year guarantee period from the time of their acceptance.

The end of the original guarantee period does not release the Contractor from his responsibility to care for the replacement plants.

703.23.3.10 Method of Measurement - Trees

The method of measurement for trees will be per unit per species, variety, and size as specified.

703.23.3.11 Basis of Payment - Trees

The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Trees (by species, variety, and size). Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, handle, store, excavate for, plant, provide and place screened topsoil backfill, provide and apply fertilizer, water, and insecticide, stake, dispose of waste and excess materials, and provide care and maintenance.

703.23.3.12 Method of Measurement - Shrubs

The method of measurement for shrubs will be per unit per species, variety, and size specified.

703.23.3.13 Basis of Payment - Shrubs

The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for Shrubs (by species, variety, and size). Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, handle, store, excavate for, plant, provide and place screened topsoil backfill, provide and apply fertilizer, water, and insecticide, dispose of waste and excess materials, and provide care and maintenance.

703.24 Pressure Treated Landscape Timbers

703.24.1 Scope of Work

The work under this section shall consist of the furnishing and installing of pressure treated landscape timbers meeting the requirements of the plans and specifications.

703.24.2 General

The Contractor shall furnish all new timbers for the work. All existing timbers which are required to be removed for the execution of the work shall be properly disposed of off site. No existing timbers, or portion thereof, shall be made a part of the new work, once they have been removed.

The Contractor shall nail the ends of adjoining landscape timbers together utilizing hot dipped galvanized nails, one-quarter inch by eight inches (1/4" x 8").

703.24.2.1 End Treatment

All field cuts shall be painted with the manufacturer's recommended end cut

treatment. Two coats of end cut treatment shall be applied. Sufficient time shall be allowed between the two coats to allow the material to penetrate into the wood.

703.24.2.1.1 Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, and apply the end treatment as required for the project.

703.24.2.2 Staking of Landscape Timbers

When required by the plans or by the Engineer, the timbers shall be staked utilizing two (2) - three-quarter inch by thirty-six inch (3/4" x 36") reinforcing rods per timber. The rods shall be inserted two (2') feet from the ends of the timber. Installation shall be performed by predrilling an eleven-sixteenth (11/16") inch diameter hole through the timber for each rod.

703.24.2.2.1 Basis of Payment

The cost of this item shall be included in the Contract Unit Price bid for the work causing its need, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, predrill, and install the landscape timber stakes as required for the project.

703.24.3 Construction

703.24.3.1 Landscape Timbers

703.24.3.1.1 Installation of New Landscape Timbers

Where required by the plans or directed by the Engineer, the Contractor shall install new landscape timbers. Recycled or salvaged railroad ties will not be acceptable.

This work shall include the excavation of the trench to set the timbers to proposed finished grades, as specified; the furnishing, transporting, cutting, application of end treatment, and placing of the new timbers; the compaction of the area abutting the timbers; and securing the timbers with nails, spikes, and reinforcing rods as required.

703.24.3.1.2 Removal of Existing Landscape Timbers

Where required by the plans, or directed by the Engineer, the Contractor shall remove existing landscape timbers and/or railroad ties. This item shall not include work other than the restoration of the area as required.

The Contractor shall restore the area with a minimum of four (4") inches of topsoil, or prepare the area for other construction, e.g. installation of concrete brickpavers, or grass.

- 703.24.3.1.3 Removal of Existing and Installation of New Landscape Timbers  
Where required by the plans, or directed by the Engineer, the Contractor shall remove existing landscape timbers and/or railroad ties, and replace them with new landscape timbers meeting the requirements of these Standard Specifications.

The Contractor shall restore the adjoining area with a minimum of four (4") inches of topsoil, or prepare the area for other construction, e.g. installation of concrete brickpavers, or grass.

The Contractor shall properly dispose of all waste materials from the work. He shall comply with all laws regarding the disposal of hazardous materials, as may apply to this work.

- 703.24.3.1.4 Method of Measurement  
The method of measurement will be per Lineal Foot of Landscape Timbers installed, measured in place. For variable height planters or borders, the measurement shall be per Lineal Foot of exposed Landscape Timber per layer installed, measured in place. No adjustment will be given for waste materials. Cut sections can however be used in the work if they are a minimum of two (2') feet in length.

- 703.24.3.1.5 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for; Installation of New Landscape Timbers, Removal of Existing Landscape Timbers, or Construct Landscape Timber Planter. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to do the work in conformance with the Contract Documents.

- 703.24.3.2 Landscape Timber Retaining Walls  
Where required by the plans or the Engineer, the Contractor shall construct Landscape Timber Retaining Walls conforming to these Standard Specifications.

Construction of the retaining wall shall be such as to provide a level, horizontal surface to the top of the wall.

Deadman ties shall be installed horizontally at approximately sixteen (16') feet on center, in every third horizontal row of ties. The location of the deadman ties shall be staggered throughout the wall. Deadman ties shall be a minimum of thirty-six (36") inches long.

- 703.24.3.2.1 Method of Measurement  
The method of measurement will be per square foot of exposed surface and shall include the exposed area of required deadman ties, which shall not be measured separately. (For purposes of measurement, a retaining wall shall be defined as exceeding thirty (30") inches in height measured from the low point of adjacent lower walkway, or grass area.) No adjustment will be given for waste materials. Cut sections can however be used in the work if they are a minimum of two (2') feet in length.

703.24.3.2.2 Basis of Payment  
The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for: Construct New Landscape Timber Retaining Wall, Remove Existing Landscape Timber Retaining Wall, Remove Existing Landscape Timber Retaining Wall and Construct New Landscape Timber Retaining Wall. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to do the work in conformance with the Contract Documents.

703.24.3.3 Landscape Timber Planter  
Where required by the plans or the Engineer, the Contractor shall construct Landscape Timber Planter conforming to the plans and specifications.

Construction of the planter shall be such as to provide a level, horizontal surface to the top of the landscape timber.

Where new planters are developed, or existing planters are expanded, the area created by the new timber installation shall be excavated to allow for the placement of a minimum of eight (8") inches of topsoil and shall be covered with a maximum of four (4") inches of wood chips.

703.24.3.3.1 Basis of Payment  
Payment for this item shall be per the Contract Unit Price bid for Installation of New Landscape Timbers, unless specifically stated otherwise in the Contract Documents, and shall include all labor, equipment, materials, supervision, tools, supplies, and incidentals required to furnish, transport, excavate for, stake, nail, and install Landscape Timbers as required for the project. The unit price shall also include all costs for excavation required for placement of topsoil in the expanded area of existing planters as specified herein and proper disposal of waste materials.

703.24.3.3.2 Basis of Payment-Topsoil and Wood Chips  
Payment for Topsoil and Wood Chips shall be per the appropriate Contract Unit Price bid as specified elsewhere in these Standard Specifications.

703.25 Miscellaneous Landscaping Items

703.25.1 Concrete Border Curb

703.25.1.1 Scope of Work  
When required by the plans, or directed by the Engineer, the Contractor shall construct a concrete border curb, conforming to the details of these Standard Specifications.

703.25.1.2 Materials  
Concrete materials shall conform to the requirements of Section 500 of these Standard Specifications.

703.25.1.3 General  
The dimensions of the curb shall be six inches by eighteen inches (6" x 18").

The base shall be six (6") inches of compacted crushed stone gradation No. 2. or other approved aggregate base material.

The excavation shall allow for a minimum of six (6") inches of crushed stone for backfill on either side of the curb.

703.25.1.4 Method of Measurement

The method of measurement shall be per lineal foot.

703.25.1.5 Basis of Payment

The basis of payment shall be as measured above and paid for per the Contract Unit Price bid for 6" x 18" Concrete Border Curb. Said payment shall be full and complete compensation for the furnishing of all labor, equipment, materials, supervision, tools, supplies, and incidentals required to excavate for, form, pour, finish, and backfill the concrete border curb, adjust and restore the adjoining area, and properly dispose of excess waste material, as required by the project.

- END OF SECTION 700 -

STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

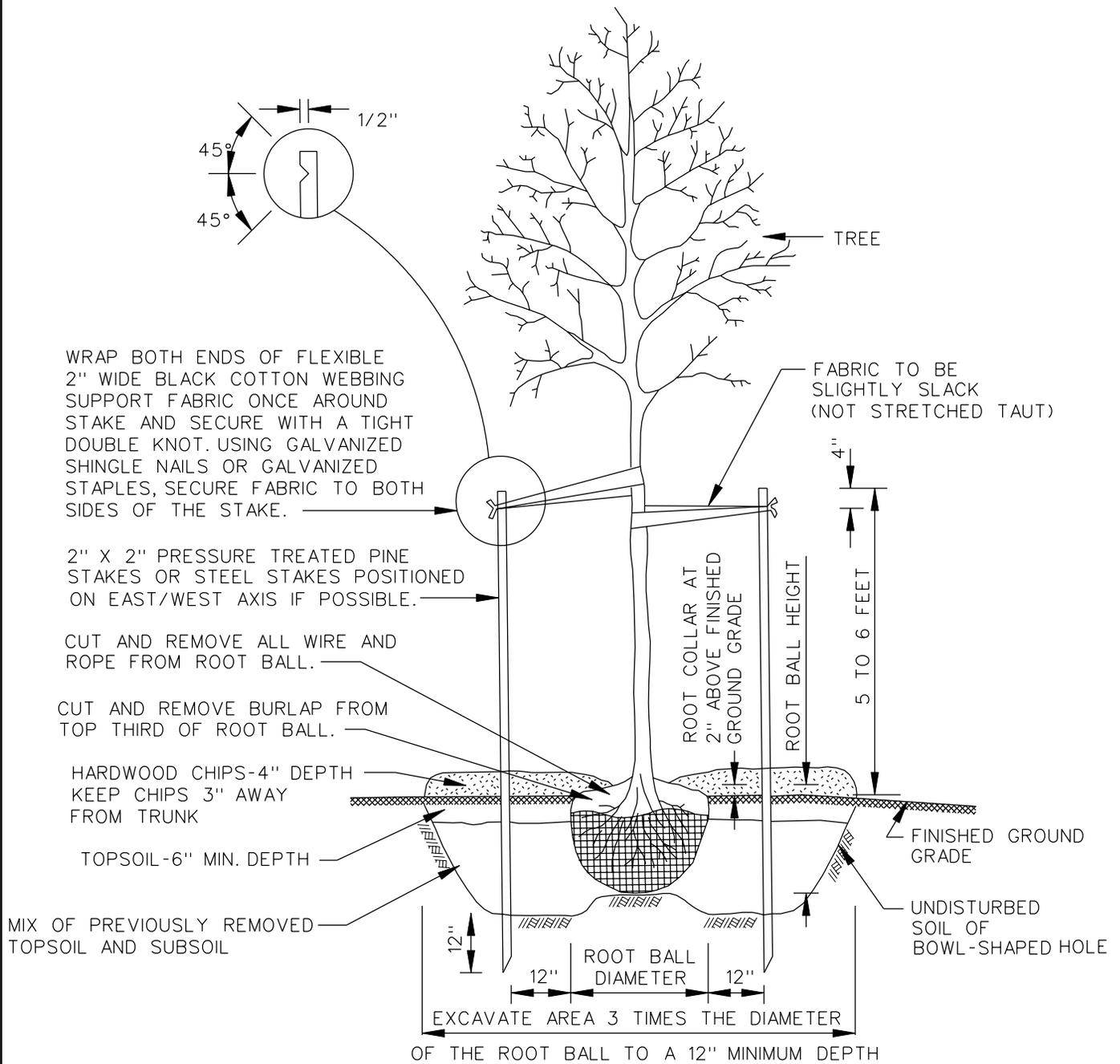
CITY OF MANITOWOC, WISCONSIN

SECTION 700

LANDSCAPING AND RESTORATION

DETAILS

<u>Detail Number</u>	<u>Title</u>
701	Tree Planting Detail
702	Shrub Planting Detail



NOTES:

- 1) SET ROOT BALL ONTO MOUND OF UNDISTURBED SOIL. DO NOT EXCAVATE OR DISTURB THE SOIL DIRECTLY UNDER THE ROOT BALL. SET DEPTH OF HOLE SO THE ROOT COLLAR IS 2" ABOVE FINISHED GROUND GRADE.
- 2) SCARIFY SIDES OF EXCAVATED HOLE TO 1" MINIMUM DEPTH.
- 3) SCARIFY SIDES OF ROOT BALL BEFORE BACKFILLING TO RELEASE ROOTS.

NO SCALE

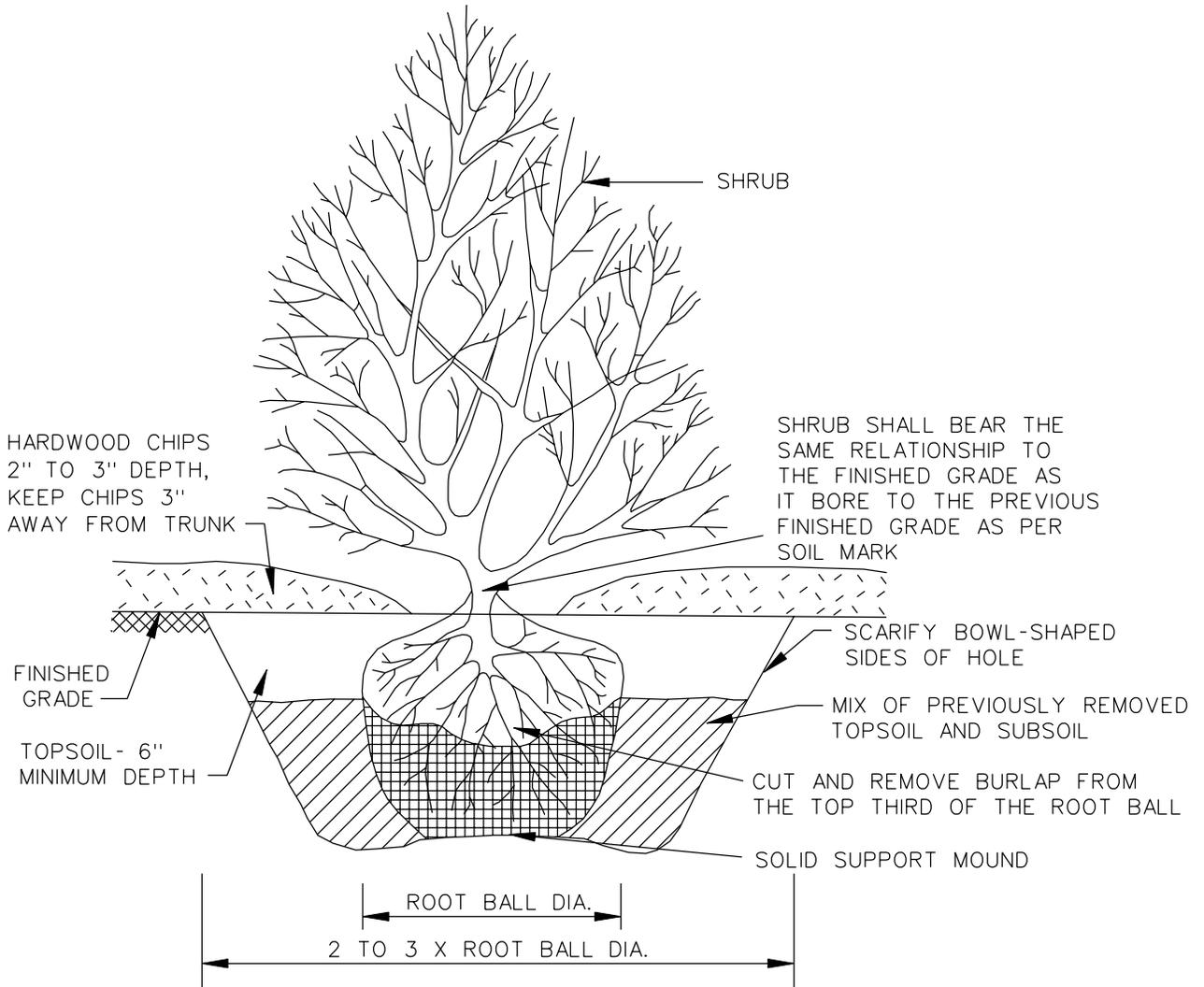
# STANDARD TREE PLANTING DETAIL FOR BALLED & BURLAPPED TREES



**City of Manitowoc**  
ENGINEERING DEPARTMENT

Rev. 4/05

FORM NO.  
**701**



NO SCALE

# STANDARD SHRUB PLANTING DETAIL



**City of Manitowoc**  
ENGINEERING DEPARTMENT

Rev. 4/05

FORM NO.  
**702**