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**SECTION 31 10 00
SITE PREPARATION**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Protection of existing trees indicated to remain.
- B. Stripping and stockpiling topsoil.
- C. Site demolition, clearing, grubbing, and subsequent off-site disposal of improvements or other features required to accommodate the new construction.
- D. Protection of existing utilities where located in the field or where indicated on the plans.
- E. Installing and maintaining erosion control measures.

1.2 RELATED WORK

- A. Section 31 25 00 - EROSION CONTROL

1.3 PROJECT CONDITIONS

- A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Restore to original grades and conditions, areas adjacent to the Site disturbed or damaged as a result of site preparation work.
- C. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

1.4 SUBMITTALS

- A. Storm Sewer Shop Drawings
- B. Storm Water Infrastructure Construction Inspection Report
 - 1. The City of La Crosse requires all Stormwater management devices be inspected during construction. An inspection report is provided on 31 10 00, Page 4.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over ½" in diameter. Screen on-site topsoil containing, in particular, stones, to remove such objects prior to placement on the site.

2.2 WASTE MATERIALS

- A. Waste Materials are defined as: Manufactured products such as pipe, concrete, asphalt paving, curbs, boards, wrapping, boxes, wire, packages that contained equipment, maintenance products, cans, and trash. Natural materials such as unacceptable

subsoils, excess subsoils, unacceptable and excess topsoil, and un-chipped tree parts are also considered waste materials.

PART 3 - EXECUTION

3.1 SITE CLEARING

- A. Inspection: Prior to commencement of work, inspect areas in which work will be performed. Photograph existing conditions of structure surfaces, equipment, or surrounding properties that could be misconstrued as damage resulting from the work; file copies with Owner's representative.
- B. Cover and protect improvements indicated "to remain" from soilage or damage.
- C. Remove grass and other vegetation, or obstructions, as required, to permit installation of new construction. Do not bury tree parts on site: dispose of off-site as waste materials. However, chipped tree parts can be mixed with salvaged topsoil with the approval of the A/E.
- D. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Strip topsoil only where necessary to install new construction.
- E. Cut exposed tree roots in a clean and careful manner, flush with the excavated surface.
- F. Stockpile topsoil in storage piles as necessary. Construct storage piles to provide free drainage of surface water. Provide erosion control as specified. Do not stockpile soil within the dripline of trees indicated to remain.
- G. Dispose of unsuitable or excess topsoil off the site.
- H. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of conflict. Submit report to Owner's representative in written, accurate detail. Pending receipt of directive from Owner's representative, rearrange site preparation schedule as much as practical to continue overall job progress without delay.

3.2 UTILITIES

- A. Before starting excavation, establish location and extent of underground utilities that may be present in work area.
- B. Notify utility companies to remove and relocate lines that are in the way of excavation where necessary.
- C. Maintain, reroute or extend as required, existing utility lines to remain that pass throughout work area. Contractor shall pay any costs for this work.
- D. Protect active utility services uncovered by excavation.
- E. Remove abandoned utility service lines from area of excavation. Cap, plug or seal such lines and identify at grade per requirements of the utility having authority.
- F. Accurately locate and record abandoned and active utility lines, rerouted or extended, on project record documents where encountered.

3.3 TEMPORARY EROSION CONTROL

- A. Temporary erosion control: In addition to permanent erosion control measures shown on the plans, provide control measures to protect the work in progress. Sediment traps, bale barriers, rock barriers, silt fence, tracking control aprons, channel erosion matting, seeding, and soil stabilizers shall be installed and maintained by the Contractor as temporary measures until the work progresses to a stage that the planned permanent erosion control measures can be installed and become effective. Specifically addressed the following areas:
 - 1. Areas of concentrated flow.
 - 2. Areas having slopes greater than 4%.
 - 3. Areas adjacent to property lines.
- B. Work required to comply with the recommendations of the weekly inspection report logs is considered temporary erosion control.

3.4 DISPOSAL OF WASTE MATERIALS

- A. Burning on Owner's Property: Not permitted.
- B. Removal from Owner's Property: Remove all waste materials from Owner's property and dispose of in accordance with all applicable laws and regulations.

3.5 CLEANING

- A. Upon completion of site preparation work, clean areas within the contract limits, remove tools, and equipment. Provide the Site clear, clean, and free of materials and debris and suitable for site work operations.

3.6 REPAIRING

- A. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of site preparation work. Repair and clean adjacent construction or surfaces soiled or damaged by site preparation work.

END OF SECTION

Note: The City of La Crosse requires all stormwater management systems be inspected during construction by the design engineer, or other qualified professional. This specific form is provided as a convenience to the contractor, to document the construction of stormwater management devices. It is the contractor's responsibility to coordinate with the design engineer, or other qualified professional, for required inspections of all stormwater management devices during construction. Contractor may not proceed with construction of the stormwater management system(s) until each previous stage of construction has been inspected and approved by design engineer, or other qualified professional.

Stormwater Infrastructure Construction Inspection Report - Biofilters		
Name of Permittee:		
Construction Site Name (Project):	Construction Site Address:	
Contractor:	Contractor Phone:	
Engineer:	Engineer Phone:	
Description of Inspection	Date	Person Performing Inspection
1. Site stabilization: Verify all areas draining to devices are finished and stabilized.		
2. Basin excavation: Verify bottom of device is at the correct elevation and the correct size, and has not been compacted		
3. Storm Piping: If storm piping is required, verify the correct pipe size and elevations. Verify perforated pipe is installed correctly in sand layer.		
4. Biofilter Media: Verify sand and biofilter media layers are installed to correct elevations and not compacted.		
5. Edging and Planting: Verify the biofilter edging is installed level, at the correct elevation, and to the dimensions shown on the plan. Verify bark mulch has been installed to the correct depth and all plantings are installed.		
6. Additional Notes:		

**SECTION 31 22 00
EARTHWORK**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The Contractor shall provide all labor; materials, equipment and service necessary for, or incidental to, the completion of the work specified in this Section including staking and lay out of the work.
- B. Excavate subsoil and reform to grades, contours, and levels shown on the drawings. All proposed grades and contours shown on the plans are finished surfaces.
- C. Provide approved fill material required to meet grades called for in the drawings.
- D. Quality control testing services.

1.2 RELATED WORK

- A. Section 31 10 00 - Site Preparation
- B. Section 31 23 16 - Excavating and Backfilling
- C. Section 31 23 50 - Finish Grading
- D. Section 31 25 00 - Erosion Control

1.3 DEFINITIONS

- A. Excavation: Removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, base, aggregate, or topsoil material.
- C. Subbase: The layer placed between the subgrade and base.
- D. Base: The layer placed between the subbase and the surface pavement.
- E. Unauthorized Excavation: Removing materials beyond indicated subgrade elevations or dimensions without direction by the Owner. Unauthorized excavation, as well as remedial work directed by the Owner, shall be at the Contractor's expense.
- F. Temporary Erosion Control Measures: any erosion or sediment control measure needed to ensure that sediment does not leave the project limits. This includes all control work until the completion of grading and the installation of all plan erosion control measures.
- G. Plan Erosion Control Measures: all erosion and sediment control measures shown on the project drawings.
- H. WISDOT: Wisconsin Department of Transportation and their published standards.

1.4 SUBMITTALS

- A. Quality Assurance Submittals
 - 1. Closeout Submittals
 - a. Compliance Report in accordance with Article 3.16 A.

1.5 QUALITY ASSURANCE

- A. ASTM D698, standard proctor density, shall be the standard used to determine the optimum density and optimum moisture content for the soil work in this Section. Proof Rolling shall be used to determine adequate compaction of materials.

1.6 PROJECT CONDITIONS

- A. Provide sufficient barricades and protective devices adjacent to excavations to safeguard against injury.
- B. The use of explosives will not be permitted.
- C. Keep excavations free of all surface and groundwater as required for construction activities.
- D. Protect excavation bottoms against freezing when atmospheric temperature is less than 35° F.
- E. Slope sides of excavations to comply with state, federal and local codes and ordinances having jurisdiction. Provide shoring and bracing to retain banks and prevent collapse of excavations as necessary to safeguard workmen, prevent movement of adjacent ground and avoid damage to existing improvements.
- F. Provide sufficient temporary erosion control measures to protect work in progress and to prevent sediment from leaving the project limits.

1.7 EXISTING CONDITIONS

- A. Known underground, surface, and aerial utility lines and buried objects are indicated on the drawings. Digger's Hotline shall be contacted three (3) working days prior to start of any work.

1.8 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. An independent soil testing and inspection service for quality control testing during earthwork operations shall be selected by the Contractor. The services performed by the soil testing service will be paid by the Contractor as follows:
 - 1. Compaction Testing
 - a. Field density tests for determining the compaction of the fill in place and the native material shall be completed by proofrolling. The progress of the work in accordance with standard recognized procedures for making such tests. The cost of all compaction testing shall be paid by the Contractor. The cost for tests that do not yield the compaction level specified shall also be borne by the Contractor.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. General Summary: The fill materials will be divided into two categories as specified below:
 - 1. Excavated Material from On-Site: Material excavated from on-site may be reused as a suitable fill.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Establish and identify lines, levels, contours and datum.
- B. Maintain benchmarks, monuments and other reference points. Re-establish if disturbed or destroyed at no cost to Owner.
- C. Before start of grading, establish the location and extent of utilities in the work areas.
- D. Protect existing structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- E. Protect subgrade and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- F. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff to adjacent properties.

3.2 DEWATERING

- A. Prevent surface water from entering excavations and from ponding on prepared subgrade during earthwork operations. Provide trenches or berms as necessary.

3.3 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: All excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot.
- B. Excavate surfaces under future walks and pavements to indicated cross sections, elevations, and grades.

3.5 APPROVAL OF SUBGRADE

- A. When the Contractor's geotechnical engineering service determines that unforeseen unsatisfactory soil is present, over-excavate and replace with approved fill material.

- B. Unforeseen additional excavation and replacement with granular backfill material will be paid for on a unit cost basis established at the time the work is required.
- C. Reconstruct subgrade damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Owner.

3.6 STORAGE OF SOIL MATERIAL

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water.
- B. Stockpile soil materials away from edge of excavations.

3.7 FILL

- A. Preparation: Remove vegetation, debris, unsatisfactory soil, obstructions, and deleterious materials from ground surface prior to placing fills.
- B. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- C. When subgrade or existing ground surface to receive fill has density less than that required for fill, the Contractor shall compact the surface to required density.
- D. Place fill material in layers to required elevations.

3.8 COMPACTION

- A. Place fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers.
- B. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D698:
 - 1. Under future structures, steps, and pavements, compact the top 12" below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
 - 2. Under lawn or unpaved areas, compact each layer of backfill or fill material at 85 percent maximum dry density.

3.9 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Slopes should be graded to direct surface drainage to proposed new inlets.
- B. Provide a smooth transition between existing adjacent grades and new grades.
- C. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

- D. Site Grading: Slope grades to direct water away from future building and to prevent ponding. Finish subgrade to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: ± 0.10 foot.
 - 2. Pavements: ± 0.10 foot.

3.10 TEMPORARY EROSION CONTROL

- A. Temporary erosion control: In addition to plan erosion control measures shown on the Drawings, the Contractor shall provide control measures to protect the earthwork in progress. Sediment traps, bale barriers, rock barriers, silt fence, tracking control aprons, channel erosion matting, seeding, and soil stabilizers shall be installed and maintained by the Contractor as temporary measures until the work progresses to a stage that the planned permanent erosion control measures can be installed and become effective. The following areas shall be specifically addressed:
 - 1. Areas of concentrated flow shall be protected.
 - 2. Areas having slope greater than 4%.
 - 3. Areas adjacent to property lines.

3.11 CORRECTIVE ACTION

- A. The Owner reserves the right to order the Contractor to take corrective action at the Contractor's expense, if the A/E or the Owner's representative documents that sediment is being tracked off or washed off the site due to work by the Contractor or work done under this contract.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test, by proof rolling, any part of the work they deem appropriate for such testing.
- B. When testing agency reports that subgrade, fill, or backfill are below specified density, the Contractor shall take the necessary measures to restore the area to the specified compaction and retest until required density is obtained. This shall be done at the Contractor's own expense including the costs of any re-testing.

3.13 PROTECTION

- A. Temporary Erosion Control: In addition to plan erosion control measures shown on the plans, the Contractor shall be responsible for any temporary erosion control needed to protect the work in progress.
- B. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- C. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions. Scarify or remove and replace material to depth directed by the A/E; reshape and compact at optimum moisture content to the required density.
- D. Settling: Where settling occurs during the Project Warranty period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing at no additional cost to the Owner.

- E. Restore appearance, quality and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove waste material, trash, and debris, and legally dispose of it off the Owner's property.

3.15 CLEANUP

- A. Streets and site shall be left free of excess soil, debris or stains on a daily basis.

3.16 COMPLIANCE REPORT

- A. Contractor shall submit a final report from the Contractor's testing service stating that the specification has been met. The report shall contain lab and field result reports of all testing performed to support this conclusion.

3.17 WARRANTY

- A. Contractor shall warrant all work free of defects in materials and workmanship for a period of one year following final acceptance of work by Owner.

END OF SECTION

**SECTION 31 23 16
EXCAVATION AND BACKFILLING**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Excavations for utilities shall meet the requirements of Chapter 2.2.0 of Standard Specifications for Sewer and Water Construction in Wisconsin, current edition including addenda (Standard Specification), unless otherwise specified in this Section.
- B. Dewater excavations as required. All piping shall be installed in dry conditions.
- C. Furnish, place and compact bedding and fill over piping to rough grade elevations.
- D. Contractor shall locate all underground and overhead utilities prior to beginning work.

1.2 RELATED WORK

- A. Section 31 25 00 – Erosion Control
- B. Section 33 41 11 – Storm Sewer

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Bedding Materials and Cover Materials
 - 1. On-site material may be used for bedding and cover provided that backfill materials shall meet requirements of the Standard Specifications for Sewer and Water Construction in Wisconsin.
- B. Backfill Material
 - 1. On-site material may be used for backfill provided that backfill materials shall meet requirements of the Standard Specifications for Sewer and Water Construction in Wisconsin.

PART 3 - EXECUTION

3.1 PREPARATION AND LAYOUT

- A. Establish extent of excavation by area and elevation. Designate and identify datum elevation.
- B. Set required lines and levels.
- C. Maintain benchmarks, monuments and other reference points.

3.2 EXCAVATING

- A. Excavate in accordance with lines and grades.
- B. Cut trenches sufficiently wide to enable proper installation of utilities and to allow for

inspection.

- C. When complete, request A/E to inspect excavations. Correct unauthorized excavations as directed, at no cost to Owner.
- D. Stockpile excavated subsoil for reuse. Remove excess or unsuitable excavated subsoil from site.

3.3 DEWATERING

- A. Keep trenches dry. Provide necessary equipment including pumps, piping and temporary drains.
- B. Do not discharge drainage water lines into municipal sewers without municipal approval. Ensure water discharge does not contain sediment held in suspension.
- C. Direct surface drainage away from excavated areas.
- D. Control grading in and adjacent to excavations to prevent water running into excavated areas or onto adjacent properties or public thoroughfares.
- E. Furnish and operate suitable pumps on a 24-hour basis to keep excavations free of water until services have been placed and backfill is complete.

3.4 LAYING OF PIPE

- A. Class "C" bedding shall be used for all pipe construction with materials specified herein.

3.5 BACKFILLING

- A. All backfill material shall be approved by the Contractor's testing service.
- B. Ensure trenches are free of building debris, snow, ice or water, and ground surfaces are not in a frozen condition.
- C. Backfill systematically and as early as possible to allow maximum time for natural settlement and compaction. Do not contaminate sub-base materials with backfill materials.
- D. Place and compact fill materials in continuous layers not to exceed 12". Use methods so as not to disturb or damage services.
- E. Maintain optimum moisture content of fill materials so as to attain required compaction density.
- F. Remove surplus fill materials from site.

3.6 COMPACTION REQUIREMENTS

- A. Contractor shall provide equipment capable of adding measured amounts of moisture to soil material as determined by moisture-density tests. Where the subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply required amount of water to surface of subgrade, or layer of soil material, in such manner as to prevent free water appearing on surface during or subsequent to compaction operations.

Remove and replace soil material that is too wet to permit compaction to 95% of maximum dry density as established in accordance with ASTM D698.

3.7 COMPACTION TESTING

- A. An independent testing laboratory appointed and paid by the Contractor will perform testing of compacted fill materials. Perform testing so as to least encumber performance of the work.
- B. Contractor will pay for costs of additional testing required due to improper performance of work.
- C. When work of this Section or portions of work are completed, the Contractor shall notify testing laboratory to perform density test. Do not proceed with additional portions of work until results have been verified. If, during progress of work, tests indicate that compacted materials do not meet specified requirements, remove defective work, replace and retest at no cost to owner as directed by A/E.
- D. Contractor shall notify testing laboratory 48 hours in advance of time compaction testing is required.
- E. Where fill materials are too thin to test using traditional methods, Contractor shall use an alternate approved method to verify soil compaction.

END OF SECTION

**SECTION 31 23 50
FINISH GRADING**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Finish Grading for lawn and landscaped areas.

1.2 SUBMITTALS

- A. Submit results of soil analysis in accordance with Article 1.4 A

1.3 RELATED SECTIONS

- A. Section 31 10 00 - Site Preparation
- B. Section 31 25 00 - Erosion Control
- C. Section 32 92 19 – Seeding

1.4 QUALITY ASSURANCE

- A. Provide and pay for a testing service to analyze stockpiled topsoil for fertilization requirements for lawns and planting beds. Submit the results of the analysis to the A/E.

1.5 PROJECT CONDITIONS

- A. The Owner makes no guarantee that sufficient topsoil materials are present on the site to complete the project. Bidders shall visit the site and take whatever tests are necessary to determine topsoil availability. Soil borings taken by the Owner are included with this specification to assist in this determination.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil salvaged from the stripping operations or new topsoil brought onto the Site (imported topsoil).
- B. All imported topsoil shall be subject to the approval of the A/E. Remove topsoil not approved from the site as waste material when directed to do so by the Owner.

PART 3 - EXECUTION

3.1 FINE GRADING

- A. Grade areas within construction limits to establish new grades as indicated on the Drawings.
- B. Grade additional areas disturbed by construction operations including from vehicle use, fill stockpiling, and borrow areas to original grades or as directed by the A/E.
- C. Install grade stakes in addition to those provided by the Owner, as necessary to meet the

following requirements:

1. Grade to uniform levels or slopes between points or contours where indicated on the Drawings.
 2. Provide positive drainage from future building areas.
- D. Tolerances: Deviations from finish grades indicated shall not exceed 1".

3.2 PLACING TOPSOIL

- A. Remove topsoil not meeting quality standards and replace with material acceptable to the A/E.
- B. Do not grade, excavate or work topsoil in frozen or muddy conditions.
- C. Place topsoil immediately in areas where lawns or landscaping will occur as shown on the Drawings to a minimum of 6" thick. All attempts to place topsoil during dry weather should be made, but in no case shall more than three (3) days pass before placing topsoil on areas where rough grading is complete.
- D. Fine grade topsoil within 24 hours of placing topsoil to eliminating rough or low areas. Maintain profiles and contour of subgrade indicated on the Drawings.
- E. Coordinate final grading of topsoil to minimize damage by subsequent construction activities.
- F. Manually spread topsoil in the drip line of trees and close to plants to prevent damage.
- G. Leave stockpile area and site clean and raked, ready to receive seeding.

3.3. TEMPORARY EROSION CONTROL

- A. In addition to permanent erosion control measures shown on the Drawings, provide control measures to protect the finish grading in progress. Install and maintain sediment traps, bale barriers, rock barriers, silt fence, tracking control aprons, channel erosion matting, seeding, soil stabilizers, and other measures as temporary measures until the Work progresses to a stage that the planned permanent erosion control measures can be installed and become effective. Specifically address the following areas:
 1. Areas of concentrated flow.
 2. Areas having slope greater than 4%.
 3. Areas adjacent to property lines.

END OF SECTION

**SECTION 31 25 00
EROSION CONTROL**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Provide all materials and labor required for permanent and temporary erosion control and soil stabilization of all areas disturbed by excavation, rough grading and fill operations including, but not limited to, the following:
 - 1. Storm water run-off diversions and channeling, temporary and permanent.
 - 2. Sediment traps for channelized run-off.
 - 3. Establishment of vegetation in permanent drainage ways.
 - 4. Drainage inlet protection.
 - 5. Prevention of vehicle tracking to off-site roadways.
 - 6. Maintenance of sediment traps.
 - 7. Slope stabilization.
 - 8. Application of erosion control permits.
 - 9. Temporary erosion control measures, not shown on the Drawings, necessary to protect soil from being transported off site during in progress site work.
 - 10. Keeping and reporting of inspection logs of all erosion control measures and delivering copies of all reports to the Owner at the time of project close out. A minimum of one report per week submitted on the supplied form is required.

1.2 RELATED SECTIONS

- A. Section 31 22 00 – Earthwork
- B. Section 31 21 50 – Finish Grading

1.3 REFERENCES

- A. Standard Specifications for Highway and Structure Construction, Current Edition, State of Wisconsin Department of Transportation, Division of Highway.
- B. Wisconsin Department of Transportation Product Acceptability List (PAL).
- C. Guidelines for Erosion and Sedimentation Control Planning and Implementation, EPA.
- D. Processes, Procedures and Methods to Control Pollution from All Construction Activity, EPA.

1.4 REQUIREMENTS

- A. Secure any/all local Municipal, Town or County erosion control/land ordinance permits prior to initiating work. Associated fees are incidental to the Work of this Section.
- B. This project is less than 1 acre in size and will not be covered by permitting from the Wisconsin Department of Natural Resources. However, field reports are still required and Contractor shall maintain the site including but not limited to complying with the recommendations of Weekly Inspection Reports.
- C. Comply with all local erosion control ordinance/zoning codes.
- D. All erosion control measures for diversions or outlets shall be constructed and stabilized prior to any grading or disturbance of the construction site.

- E. Install tracking control and perimeter sediment control prior to disturbing the contract area.
- F. Apply seeding, sodding, mulching, or other equivalent practices within fourteen (14) days of the end of active disturbance of the soil surface, even if topsoil, where specified, has not been applied. This does not relieve the Contractor of the obligation to furnish the topsoil as specified.
- G. Place other erosion or sediment control measures shown on the Drawings as appropriate to site conditions as the project progresses.
- H. The Contractor shall be responsible for temporary erosion control measures. These are erosion or sediment control measures not shown on the Drawings but necessary to protect the site when the site work is only partly completed, due to the unpredictability of the weather, the progress of the Work, or the Contractor's methods. The Contractor shall be aware of the potential for erosion problems due to the stage of the progressing Work and take any reasonable steps necessary to protect the site from erosion of soil surfaces and the loss of sediment from the site due to erosion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Silt fence: Constructed with 2" x 2" hardwood posts 8'-0" on center with only WisDOT approved fabric as listed in the PAL.
- B. Erosion Control Matting: For slopes 4:1 or flatter; American Excelsior Curlex I CL or Curlex II CL or other matting products classified as "Urban" as found in the Wisconsin DOT PAL list or A/E approved equivalent. For slopes greater than 4:1, American Excelsior Curlex III CL or consult the Wisconsin DOT PAL list for equal. When using products from the PAL list, the application shall follow the selections tables contained in the PAL.
- C. Turf Reinforcing Mat (TRM):
 - 1. Material: 100% recycled post-consumer polyester plastic bottles.
 - 2. Configuration: Three-dimensional matrix of curved recycled fibers encased between two layers of UV stabilized polypropylene mesh.
 - 3. Manufacturer: "Recyclex TRM" as manufactured by American Excelsior Company, or approved equal.
- D. Erosion Matting Staples: As supplied and recommended by the manufacturer of the erosion control matting. Provide biodegradable matting staples in future lawn areas; E-Staple as manufactured by American Excelsior or equal.
- E. For seeding completed before May 15th or after September 15, straw mulch shall be replaced with matting "Futerra F4 Netless" by Profile Products, LLC (800) 508-8681.
- F. Tracking Control Aggregate:
 - 1. Use 1-½" Clear Crushed Stone as specified by the Wisconsin Department of Natural Resources (Wi DNR). Aggregate mixtures of uncrushed rocks and sand will not be allowed for clear crushed stone.
 - 2. The Engineer may reject material produced from deteriorated concrete or from non-durable rock such as sandstone, shale, slate, disintegrated granite, or heavily weathered rock. Remove rock delivered to the site that contains material not meeting DNR specification as determined by the A/E and replaced with suitable material at no additional cost to the Owner.

- G. Tracking Control Fabric: GEOTEX 200ST or A/E approved equal.

PART 3 - EXECUTION

3.1 SILT FENCE

- A. Install silt fence in the locations indicated on the Drawings. Install prior to earthwork or site preparation. Installation may be delayed while an area scheduled for silt fence is under construction. When installation of the silt fence is delayed, install as soon as practical, but in no case shall an area be left unprotected for more than two days.
- B. Install silt fence in accordance with the Drawing, the approved shop drawings, and the recommendations of the manufacturer.

3.2 EROSION CONTROL MATTING

- A. Place erosion matting in areas designated on the Drawings or as appropriate. Areas indicated on the Drawings identify only the areas needing the control measure, not the actual area of erosion matting.
- B. Place staples following the directions of the manufacturer, providing a minimum of two staples per square yard of matting.
- C. Install erosion matting within 2 days of finish grading to areas receiving matting.

3.3 TEMPORARY EROSION CONTROL

- A. Temporary Erosion Control: In addition to plan erosion control measures, the Contractor shall provide control measures to protect the site during work progress. Install and maintain sediment traps, bale barriers, rock barriers, silt fence, tracking control aprons, channel erosion matting, temporary seeding, and soil stabilizers as temporary measures until plan measures can be installed and become effective. Specifically address the following areas:
 - 1. Areas of concentrated flow.
 - 2. Areas having slope greater than 4%.
 - 3. Areas adjacent to property lines.

3.4 TRACKING CONTROL APRON

- A. Place Tracking Control Rock in areas designated on the Drawings in an 18" thick layer.
- B. Cover subgrade areas for tracking control apron with tracking control fabric prior to placement of tracking control rock.

3.5 CURB PROTECTION

- A. Bale Barriers: Use bales of straw or hay as a temporary control measure to protect newly placed curb and gutter. Bales shall be dug in, securely staked (minimum of 2 stakes per bale) and placed tightly to the back of the curbs to direct water over the curb and into the gutter. Use a minimum of two bales at 50' intervals. Do not allow water to pass between the bale and the curb.
- B. Sand Bags: Sand bags shall be used on the roadway surface to prevent erosion of the gravel next to the new curb. Place bags at a minimum 50' interval. Bags shall be large enough to force water off the gravel surface and onto the concrete gutter.

3.6 DOCUMENTATION AND REPORTING

- A. Contractor shall keep, on site, a copy of the Plan and written documentation associated with the site WPDES permit including erosion control plans, the general storm water discharge permit, the Erosion Control and Storm Water Management Plan (ECSWMP), and a copy of the NOI filed by the A/E on behalf of the Owner.

3.7 INSPECTION

- A. Inspect all erosion and sediment control practices weekly, and within 24 hours following a rainfall of 0.5 inches or greater. Log results of the inspections in a log to be kept on site. Each inspection shall respond to the seven areas indicated on the form included in this specification (31 25 00, Pages 5 & 6). Continue inspections until final acceptance. After receiving the log, the A/E shall file the Notice of Termination required by the WPDES permit.

3.8 REQUIRED FORM

- A. Contractor shall use WDNR Form 3400-187 (attached) for all required erosion control inspections.
- B. Copy and use the following pages: 31 25 00, Pages 5 & 6, for making site inspection reports.

3.9 MAINTENANCE

- A. Inspect diversions within 24 hours after each rainfall or daily during periods of prolonged rainfall until the vegetative cover is stabilized. Make all necessary repairs immediately.
- B. Inspect silt fences and barriers within 24 hours after each rainfall or daily during periods of prolonged rainfall. Repair or replace immediately. Remove sediment deposits after each storm event or when deposits reach one-half the height of the fence or barrier.
- C. Inspect all seeding, sodding, and mulches within 24 hours after each rainfall or daily during periods of prolonged rainfall. Apply additional mulch, netting or matting immediately when necessary to maintain suitable coverage. Continue inspections until vegetative cover is established. Water seeding and sodding when necessary to promote establishment.

Continue to page 5 and 6. Section 31 25 00 ends with page 6.

dnr.wi.gov

Notice: Use of this specific form is voluntary, but the information contained on this form must be collected and kept by the permittee under s. NR 216.48(4), Wis. Adm. Code, for a construction site covered under the General WPDES Construction Site Storm Water Discharge Permit, Permit No. WI-0067831-2. This form is provided for the convenience of the permittee to meet the requirements of s. NR 216.48(4), Wis. Adm. Code. Multiple copies of this form may be made to compile the inspection report.

Inspections of implemented erosion and sediment control best management practices must be performed weekly and within 24 hours after a precipitation event 0.5 inches or greater which results in runoff.

Weekly written reports of all inspections conducted by or for the permittee must be maintained throughout the period of general permit coverage.

The information maintained in accordance with s. NR 216.48 (4) must be submitted to the Department upon request.

Name of Permittee:				
Construction Site Name (Project):			Construction Site ID No.:	
Location:			County:	
Contractor:			Field Office Phone:	
Note: Weekly inspection reports, along with erosion control and stormwater management plans, are required to be maintained on site and made available upon request.				
Date of inspection (mm/dd/yy): _____		Type of inspection: <input type="checkbox"/> Weekly <input type="checkbox"/> Precipitation Event <input type="checkbox"/> Other (specify) _____		
Time of inspection: Start: _____ a.m./p.m.		Name(s) of individual(s) performing inspection:		
End: _____ a.m./p.m.				
Weather:				
Description of present phase of construction:				
Modifications Required	Yes	No	Not Applicable	Comments/Recommendations about the overall effectiveness of the erosion and sediment control measures. Note: For each item checked "Yes", complete the follow-up information on page 2.
Ditch Checks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Erosion Control Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Erosion Mat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Grading Practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Inlet Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mulch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Offsite Sediment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Permanent Seeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Schedule / Phasing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Silt Fence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Silt Screen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sod	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Stabilized Outlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temp. Diversion Channel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temp. Settling Basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temporary Seeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tracking Pads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Name of Permittee:

Construction Site Name (Project):

Construction Site ID No.:

Use the space below for detailed follow-up action items.

Exact place of erosion/sediment control inspected	Type of erosion/sediment control and its observed condition	Description of any necessary maintenance or repair to erosion/sediment control, including anticipated date of completion

SECTION 32 12 16
ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Crushed aggregate base course and subbase.
- B. Asphaltic concrete paving.

1.2 RELATED WORK

- A. Section 31 22 00 - Earthwork

1.3 WEATHER LIMITATIONS

- A. Do not apply tack coats when temperature is below 36° F. (12° C.) or when base is wet. Apply hot-mixed asphalt paving only when temperature is above 40° F. (4° C.) and when base is dry.

1.4 SUBMITTALS

- A. Submit a Job Mix Formula (JMF) for each HMA mixture type under the contract in accordance with WISDOT Spec. 460.2.7, 2010 Edition.
- B. Submit representative gradation report of aggregate base and subbase from each source to be used on this Project.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, 2010 Edition.
- B. Provide source testing in accordance with The Asphalt Institute (TAI) procedures found in publication MS-2.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Subbase shall be Breaker Run per Wisconsin DOT Std Spec 311.2 EXCEPT no substitution is permitted.
- B. Fabric under breaker run shall be Mirafi 500X or approved equal.
- C. Crushed aggregate base course: WISDOT Std. Spec. Section 305.2.2.1, 1-1/4" gradation.
- D. Asphalt cement: WISDOT Specification 460, E1, PG58-28.
- E. Aggregate for binder course mix: WISDOT Std. Spec. Section 460, 12.5mm nominal size, Table 460-1.

- F. Aggregate for wearing course mix: WISDOT Std. Spec. Section 460, 12.5mm nominal size, Table 460-1.
- G. Mineral filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.

2.2 SOURCE QUALITY CONTROL

- A. Test samples in accordance with TAI MS-2.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads by proof rolling or other means approved by the Engineer.
- B. Verify gradients and elevations of base are correct.

3.3 PAVEMENT THICKNESS SCHEDULE

- A. Install pavement system components in accordance with the following in place thickness schedule:

<u>Pavement Section</u>	<u>Thickness</u>
asphalt wearing course	1-½"
asphalt binder course	1-½"
compacted base course	4"
compacted subbase course	6"

3.2 PREPARATION - TACK COAT

- A. Clean surfaces to receive tack coat as necessary to remove dust, dirt, or other foreign material.
- B. Apply tack coat at a controlled rate of 0.025 gallons/sq. yd., with uniform pressure. Limit application each day to the area the Contractor expects to pave during that day.

3.3 PLACING BASE

- A. Place crushed aggregate subbase and base course as shown with proper allowance for asphalt pavement.
- B. Compact base course to 95% of maximum density at optimum moisture content in accordance with ASTM D1557.

3.4 PLACING ASPHALT PAVEMENT

- A. Place binder course to achieve scheduled thickness.
- B. Place wearing course as soon as site conditions permit after placing and compacting binder course.
- C. Place wearing course to achieve scheduled thickness.

- D. Pavement Compaction
 - 1. Compact pavement by rolling.
 - 2. Do not displace or extrude pavement from position.
 - 3. Hand compact in areas inaccessible to rolling equipment.
 - 4. Minimum Required Density per WISDOT Table 460-3:
 - a. Binder Course: 89.5 % maximum density.
 - b. Wearing Course: 90.5% maximum density.
- E. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.7 TOLERANCES

- A. Flatness: Maximum variation of $\frac{1}{4}$ " measured with 10'-0" straight edge.
- B. Variation from True elevation: Within $\frac{1}{2}$ ".
- C. Scheduled Compacted Thickness: Within $\frac{1}{4}$ ".
- D. Minimum Pavement Compaction: No more than 2.5% below specified minimum.

END OF SECTION

**SECTION 32 13 13
PORTLAND CEMENT CONCRETE PAVING**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Portland cement concrete curbs, gutters, utility slabs, and aprons.

1.2 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301 and WisDOT Std. Spec. as applicable.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40°F, or surface is wet or frozen.

1.4 REFERENCE SPECIFICATIONS

- A. "WisDOT Std. Spec." shall mean State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition.

1.5 SUBMITTALS

- A. Concrete mix design data.
- B. Submit proposed joint layout and spacing.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Form materials: Conform to ACI 301.

2.2 CONCRETE MATERIALS

- A. In general, concrete materials shall meet the requirements of WisDOT Standard Specification 501 materials, except coarse aggregates shall meet the following: percentage by weight passing the one inch sieve for size C.A. Mix B No. 4 coarse aggregate gradation requirement shall be between 10 and 55 percent.
- B. Cement: ASTM C150 air entraining - Type 1A Portland type, grey color.
- C. Fine and coarse mix aggregates: ASTM C33.
- D. Water: Potable, not detrimental to concrete.
- E. Air entrainment: ASTM C260.

2.3 ACCESSORIES

- A. Curing compound: ASTM C309, Type 2, Class A.

- B. Joint filler: Filler shall be bituminous fiber type, minimum 1/2" width and meet the requirements of WisDOT Std. Spec. 415.2.3.
- C. Reinforcement shall be steel in accordance with requirements of WisDOT Std. Spec. Sections 505.1 through 505.3.

2.4 CONCRETE MIX - BY PERFORMANCE CRITERIA

- A. Mix and deliver concrete in accordance with ASTM C94, Alternative No. 2.
- B. Provide concrete to the following criteria:
 - 1. Compressive strength: 3500 psi at 28 days
 - 2. Slump: 1" to 3"
 - 3. Air entrained: 5% to 7%
- C. Use accelerating admixtures in cold weather only when approved by the A/E. Use of admixtures will not relax cold weather placement requirements.

2.5 SOURCE QUALITY CONTROL

- A. Tests on cement and aggregates may be performed to ensure conformance with specified requirements.

2.6 BASE COURSE

- A. Crushed aggregate base course: WisDOT Std. Spec. Section 305.2.2.1.1, 1-1/4" Dense Graded Base.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.2 PREPARATION

- A. Notify the A/E a minimum of 24 hours prior to commencement of concrete operations.

3.3 FORMING

- A. Place and secure forms to correct locations, dimension, and profile.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to form work during concrete placement.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with WisDOT std. spec.
- B. Ensure embedded parts and formed joints are not disturbed during concrete placement.
- C. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that cold joint can occur.
- D. Execute work in accordance with requirements of "Construction Methods" in Section 601, Section 602, and Section 415 WisDOT Standard Specification, except, as noted:
 - 1. Class of Concrete
 - a. Air-entrained concrete shall be prepared with Type 1A cement.
 - b. If due to certain weather conditions, Engineer requires use of air-entrained high-early-strength concrete, when concrete shall be prepared with Type III cement.
 - c. Grade of Concrete: Grade A or A-S2 for all concrete curb, gutter and sidewalk or driveway.
 - 2. Control Joints:
 - a. Maximum spacing between joints shall be 6 feet for sidewalk and 8 feet for curb and gutter and concrete driveway approaches.
 - b. Longitudinal control joints: Construct parallel to centerline of walk for all sidewalks 7 feet or greater in width.
 - c. Control joints may be formed by tooled joints, sawed joints, or inserts.
 - d. Sawing methods: Sawed control joints shall be formed using power saw equipped with shatterproof abrasive or diamond rimmed blades.
 - 3. Expansion joints;
 - a. For sidewalk place expansion joint filler between sidewalk and adjacent building, sidewalk and adjacent curb, and box out around all hydrants, utility poles, parking meters, and like objects and place expansion joint filler around box out, then pour concrete around object. Maximum 50' spacing.
 - b. For curb and gutter, place expansion joint filler about 3 feet on each side of inlet casting, where tangent and radial curb meet, and on tangent sections at maximum spacing of 100 feet.
 - c. Set plum and at right angles to face of curb with edges flush or slightly depressed from concrete curb and gutter surface.
 - 4. Joint Alignment:
 - a. Tolerance: Axis of any joint shall not deviate more than 1/4 inch either way from straight line at any point.
 - 5. Curing:
 - a. Impervious coating method: Concrete placed on and after May 1 and on or prior to September 1 shall be cured by Impervious Coating Method.
 - b. Paper method: Concrete placed on and after September 1 and on or prior to May 1 shall be cured by Paper Method. After removing paper or polyethylene sheeting, apply protective or anti-spalling agent.
 - 6. Protection:
 - a. Erect and maintain barricades to keep traffic off newly placed concrete.

- b. All concrete damaged prior to acceptance shall be repaired or replaced by and at the expense of Contractor.
 - c. Provide cold weather protection in accordance with WisDOT Standard Specification.
- B. Handicap ramps shall be constructed in accordance with ADA standards and shall include a detectable warning field as detailed in the plans and specifications.

3.5 FINISHING

- A. Sidewalk Paving: Light broom finish.
- B. Curbs and Gutters: Light broom finish.
- C. Inclined Sidewalk Ramps: Rough broom finish.
- D. Driveways and Parking Lots: Light broom finish.
- E. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.6 CLEANUP

- A. Within 24 hours of completion of placing concrete curb and gutter, restore crushed aggregate base foundation to condition equal to or better than prior to placement of concrete curb and gutter.

3.7 FIELD QUALITY CONTROL

- A. The Contractor's testing laboratory shall take cylinders and perform slump and air entrainment tests in accordance with ACI 301. Contractor shall assist in collecting cylinders for testing.
- B. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.8 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION

**SECTION 32 17 23
PAVEMENT MARKING**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pavement marking for asphalt paving (including repainting existing parking- restriping).
 - 1. Parking lot stripping.

1.2 REFERENCE STANDARDS

- A. FS TT-B-1325 - Beads (Glass Spheres); Retro-Reflective; Rev. D, 2007
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- C. FHWA MUTCD - Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; <http://mutcd.fhwa.dot.gov>; current edition.

1.3 SUBMITTALS

- A. Provide manufacturer's descriptive product literature for pavement marking paint system including the following:
 - 1. Product specifications.
 - 2. Application instructions.
 - 3. MSD sheets.

1.4 QUALITY ASSURANCE

- A. All materials furnished under this Section shall be provided by one manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturers:
 - 1. Pratt and Lambert
 - 2. Sherwin Williams
 - 3. A/E "approved equal"
- B. Design based upon Sherwin Williams products.

2.2 MATERIALS

- A. Paint
 - 1. Oil based product used over concrete or asphalt surface but not new seal coating.
 - a. Yellow #TM5713 Low VOX acrylic Promar.

- B. Reflective Glass Beads: Install at ADA symbols, no parking area between ADA stalls and at crosswalks. FS TT-B-1325, Type I (low index of refraction), Gradation A (coarse, drop-on); with silicone or other suitable waterproofing coating to ensure free flow.
- C. Thinners, cleaners, driers, and other additives: As recommended by the manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify surfaces to receive pavement markings are complete and compatible with approved painting system.
- B. Allow new concrete surfaces to cure a minimum of 28 days before coating.

3.2 SURFACE PREPARATION

- A. Sweep surfaces or employ other effective means of surface cleaning to remove particulate matter.
- B. Prepare surfaces in accordance with manufacturer's recommendations.

3.3 MIXING

- A. Mix in accordance with manufacturer's recommendations prior to placing into painting machine.

3.4 APPLICATION

- A. Layout in conformance with the configuration indicated on the Drawing without sharp breaks in alignment.
- B. Markings shall be 4" wide.
- C. Provide uniform coating with clean true edges.
- D. Apply paint in accordance with the manufacturer's printed instructions.
- E. Protect painted surfaces until paint is sufficiently dry to permit vehicles or pedestrian traffic to cross paint without damage.

3.5 UNSATISFACTORY APPLICATION

- A. Correct markings that do not have uniform appearance.
- B. Repair any defects in the coating system per written recommendations of the coating manufacturer.

END OF SECTION

**SECTION 32 92 19
SEEDING**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Soil preparation
- B. Seeding operations

1.2 SUBMITTALS

- A. Submit seed vendor's certification of grass seed mixture, indicating percentage by weight, and percentages of purity, germination, and weed seed for each grass species.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Sample and test seed in accordance with rules and recommendation of U.S. Department of Agriculture. Package seed in suitable bags in accordance with commercial practice and delivered to job site in dealer sealed original bags.
- B. Deliver seed, fertilizer and soil amendments in unopened containers, indicating weight, analysis, and manufacturer's name.
- C. Store products to prevent wetting and deterioration.

1.4 PROJECT CONDITIONS

- A. Protect existing plantings, utilities, paving, and other facilities from damage caused by seeding operations. The Contractor shall be responsible for damage to lawn areas caused by work of his planting, mulching, plant maintenance or replacements performed.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fertilizer
 - 1. Commercial fertilizer consisting of 50% nitrogen derived from natural organic sources or urea form. Consistency shall be granular, dry, and free flowing.
 - 2. Type A: Starter fertilizer and lime as recommended by the soil test completed under Section 31 23 50 - Finish Grading.
 - 3. Type B: Top dressing fertilizer containing 31% nitrogen, 3% phosphoric acid, and 10% potash by weight, or similar approved composition.
- B. Lawn Seed
 - 1. Fresh, clean and new crop seed mixture in compliance with applicable governmental standards.
 - 2. Mix by an approved method.
 - 3. Composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination. Poa Annua, bent grass, and noxious weed seed free.
 - 4. Rate: 4 pounds per 1000 square feet.

5. Blend:

<u>Name</u>	<u>Proportion by Weight</u>	<u>Minimum Purity</u>	<u>Germination</u>
Kentucky Bluegrass	50%	95%	85%
Pennlawn Creeping Red Fescue	15%	95%	85%
Blazer II Perennial Rye	8.75%	95%	85%
Dasher II Perennial Rye	8.75%	95%	85%
Fiesta II Perennial Rye	17.5%	95%	85%

6. When seeding occurs after September 30th and before November 15th, adjust seed mix to allow for 5 percent of the mix to be fall rye. When seeding occurs after April 1st and before May 15th, adjust seed mix to allow for 5 percent of the mix to be oats.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine finish surfaces, grades, topsoil quality, and depth. Do not begin seeding work until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Disk and rake to level minor irregularities in grade. Remove debris and stone over 1" in any dimension, and remove ridges and fill depressions to provide positive drainage.
- B. Limit preparation to areas to be immediately seeded.
- C. Loosen topsoil of lawn areas to minimum depth of 4".

3.3 PERFORMANCE

- A. Apply Type A fertilizer at a rate equal to one pound of actual nitrogen per 1,000 square feet (220 pounds/acre) and to a depth of at least 3".
- B. Application of fertilizer shall precede seeding operations by no more than seven days.
- C. Seeding
1. Seed immediately after preparation of bed. Install seed between April 1 and October 15. If special conditions exist which may warrant variance in above dates, submit written request to the A/E stating conditions and proposed variance.
 2. Perform seeding operations when the soil is dry and when winds do not exceed five (5) miles per hour velocity.
 3. Sowing of permanent crop shall be accomplished with a Brillion seeder or acceptable alternative. Apply seed in two operations with spreader adjusted so one-half of specified amount is released in each operation with the second sowing at right angles to the first. In areas too small for mobile equipment, sow with an approved hand-operated machine seeder.
 4. In areas seeded with hand-seeder, smooth and roll seed bed. Smooth seed bed with hand rakes and roll with hand roller weighing approximately 100 pounds per lineal foot. Smooth and roll on same day that seed is sown.

- D. Erosion Control Matting
 - 1. Place erosion matting in areas designated on the Drawings or as appropriate. Areas indicated on the Drawings identify only the areas needing the control measure, not the actual area of erosion matting.
 - 2. Place staples following the directions of the manufacturer, providing a minimum of two staples per square yard of matting.
 - 3. Install erosion matting within 2 days of finish grading of areas to receive matting.

3.4 RECONDITIONING EXISTING LAWNS

- A. Where substantial but thin lawn remains, rake, aerate if compacted, and cultivate soil; fertilize and seed.
- B. Water newly seeded areas. Maintain adequate soil moisture until new grass is established.

3.5 MAINTENANCE

- A. Maintain seeded lawns until final acceptance.
- B. Maintain seeded lawn areas, spot weeding, and re-seeding to achieve a uniform stand of grass, free from weeds, undesirable grass species, disease, and insects.
- C. Repair, rework, and reseed areas that wash out or erode.
- D. Consistently mow lawn areas as soon as top growth reaches a 4-1/2" height. Cut back to 3" in height.

3.6 ACCEPTANCE

- A. When grass has been cut a minimum of three (3) times and a uniform growth of lawn is established without evidence of excessive weed or crab grass infestation, submit written request to the A/E for an inspection of the established lawn.
- B. The request shall be received at least 10 calendar days before anticipated date of inspection.
- C. Weeds developing prior to final acceptance shall be treated by hand-weeding or chemical control. Provide chemical control as recommended by chemical manufacturer.
- D. Bare spots shall be no more than 2% of lawn area.
- E. Seeded areas will be acceptable provided requirements of the contract have been met.

3.7 CLEANUP

- A. Repair damage resulting from seeding operations.
- B. Upon completion of each portion of work, remove machinery, equipment, surplus materials from the site, and debris connected with execution of lawn.

END OF SECTION

**SECTION 33 41 11
STORM SEWERS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Storm sewer system and accessories as required for a complete and functional system.

1.2 RELATED SECTIONS

- A. Section 31 23 16 - Excavation And Backfilling For Utility Installation

1.3 PROJECT CONDITIONS

- A. Protect existing utilities during excavation. If utility lines are encountered or damaged, that were not indicated, notify the A/E immediately. Repair damaged utility lines immediately.
- B. Adequate advance notice shall be given to Governmental Agencies and A/E prior to disruption of traffic flow due to excavation and replacement of vehicle and pedestrian ways.

1.4 REFERENCE STANDARDS

- A. All work under this section shall comply with the Standard Drawings and Specifications for Storm Sewers for the City of Onalaska. The Standard Drawings and Specifications are made part of this specification by reference.
- B. Standard Specifications for Sewer and Water Construction in Wisconsin, Sixth Edition, (Standard Specifications) shall be used except where modified by this Specification or by the Drawings.
- C. State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, 2010 Edition.

PART 2 - PRODUCTS

2.1 PIPE

- A. Reinforced Concrete Pipe (Arch Pipe): Conforming to ASTM C506. Concrete reinforced sewer pipe joints shall be grooved tongue with gasket and have external seals per ASTM C877.
- B. Precast aprons shall be used at all pipe ends. The two joints adjacent to the end aprons shall be bolt tied.

2.3 BEDDING MATERIAL AND BACKFILL

- A. Solid pipe: In accordance with Section 31 23 16, Excavation and Backfill for Utility Installation.

PART 3 - EXECUTION

3.1 HANDLING OF MATERIAL

- A. All materials shall be handled with care to avoid damage. No material shall be dropped.
- B. All defective material shall be removed from the job site.

3.2 LINES AND GRADES

- A. All pipe shall be laid to the lines and grades shown on the drawings or given by the Engineer. The Contractor shall be responsible for the staking of line and grade, and shall pay the actual cost of having stakes set.

3.3 TESTS, INSPECTION, AND ACCEPTANCE OF MATERIALS AND WORKMANSHIP

- A. Method of testing and measurement shall be approved by the A/E and local governing agency. Provide necessary equipment and labor for making tests.
- B. The pipe barrel between sewer structures shall be straight and of uniform slope.
- C. The pipe alignment shall permit light to be visible when the barrel is lamped between structures. Where light is not visible, the conduit shall be uncovered and repaired at no cost to the Owner.
- D. All cracked pipe, misaligned joints, and points of observable infiltration shall be re-excavated and repaired.
- E. Submit a repair procedure to correct any deficiency. The Contractor shall bear the cost of correcting rejected work. The A/E shall review the procedure prior to implementing.

3.4 CLEAN-UP

- A. Upon completion of work leave all components of the drainage systems completely free of silt, debris, and obstructions.

END OF SECTION