STANDARD SPECIFICATIONS
AND
DETAIL PLATES

TOWN OF ST. JOSEPH, WISCONSIN

2016

Stantec

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TOWN OF ST. JOSEPH

QUALITY ASSURANCE

PRECONSTRUCTION CONFERENCE

1. A preconstruction conference shall be scheduled by the Developer to ensure the understanding of and compliance with the approved Project Drawings and Specifications, and to discuss the schedule, methods, and means of construction and all other matters necessary to planning the Project work.

2. All pertinent parties shall attend or be represented, and specifically a representative from the Town of St. Joseph, St. Croix County Highway Department, St. Croix County LWCD, the Developer's Engineer and the Contractor's job site supervisor/foreman shall be in attendance.

3. At a minimum, the following items should be discussed at or received prior to the preconstruction conference:

    - Project Schedule - Submitted in bar chart form prior to the preconstruction conference for review and approval.
    - List of Subcontractors.
    - Applicable Permits Required.
    - Private Utility Construction/Coordination

4. The locations of construction facilities, staging areas, product stockpiles, material storage, and temporary construction should be decided upon at the preconstruction conference and shall be removed upon completion of work.

COORDINATION BY CONTRACTOR

1. Coordinate scheduling and work of the various sections of the Project Specifications to assure efficient and orderly sequence of installation of construction elements.

2. Cooperate with others performing work within and adjacent to the Project Site. Coordinate the sequence of the work of this Project and the use of Project space with the work of others as necessary to the efficient and orderly progress of the development of the Project Site as a whole.

3. Contractor and/or subcontractor shall have approved set of Drawings and Specifications on Project Site at all times during construction.

INSPECTION

1. Any work on the project shall be witnessed by an authorized Town representative and, if applicable, St. Croix County prior to acceptance by the Town. Notify the Town representative and St. Croix County 48 hours prior to commencing construction.

DEVELOPER'S RESPONSIBILITY

1. The developer or the developer's engineer shall be responsible to furnish the Town with the following:

    - Copies of all applicable quality control and/or materials test results.

- Statement saying construction was accomplished according to these approved Specifications.
- Payment for all costs associated with inspection by the Town of St. Joseph and St. Croix County.
- Payment for all costs (i.e.: labor, materials, transportation, and lab) attributed to the proper methods and procedures involved with all applicable tests and punch lists/defective work notices.

PERMITS AND LICENSES

1. All permits and licenses necessary for the execution of the Project shall be secured by the Contractor prior to the commencement of work.

PRIVATE UTILITIES

1. Contractor shall notify Digger's Hotline at 1 (800) 242-8511 prior to excavation for location of underground utility lines.

2. Notify local utility company personnel of schedule and sequence of work so that adequate control measures can be taken to locate and protect existing utility lines.

3. Cooperate with local utility company personnel in locating, moving, protecting, and working around in-place underground facilities.

4. Coordinate with local utility companies for the installation of new utility lines in the project site, as applicable.

5. All new utilities shall be installed in a joint trench per Detail Plate No. RD-10 and RD-11.

SITE MAINTENANCE

1. Location of construction facilities, staging areas, product stockpiles, material storage, and temporary construction areas shall remain outside all Primary and Secondary Conservation Areas.

2. Contractor shall maintain stockpiles, excavations, access roads, and all other work areas free from dust. Contractor shall employ dust abatement techniques whenever a dust nuisance or hazard occurs, or as directed by the Town representative. Comply with all local ordinances.

3. Protect hazardous work areas and hazardous material storage areas.

4. Protect trees, unless specifically indicated for removal on the Project Drawings.

5. Clean access roads and haul routes daily, or more often as necessary, with mechanical pick-up street sweeper.

6. If Contractor fails to maintain Project Site, Town of St. Joseph representatives will provide Written Notice of Contractor's defective work. Contractor will be given 24 hours from the Notice to clean Project Site. After the 24 hours, Town representative may correct and remedy the defective work with all associated costs incurred charged to Contractor.

EROSION AND SEDIMENT CONTROL

1. Contractor shall implement appropriate erosion control measures to prevent erosion and control sediment from leaving Project Site.

2. Comply with approved erosion and sediment control plan. Also comply with recommended practices as described in the Wisconsin DNR Technical standards for construction site erosion and sediment control.

3. Erosion control measures shall be installed prior to any grading activities.

4. Install silt fence where required or as directed to control sedimentation until vegetation is established in accordance with Detail Plate N0. ERO-1.

5. Furnish and apply water for dust control and compaction within the Project Site as necessary. This shall include application of water on weekends and holidays if necessary, as determined by Town representative.

TRAFFIC CONTROL

1. If proposed improvements will necessitate lane closures or internal traffic control signing to existing roadways, Contractor shall furnish, install, and maintain in proper order all traffic control devices needed to guide, warn, control, and protect traffic throughout the Project Site. All traffic control devices and other protective measures shall conform to the Wisconsin Manual on Uniform Traffic Control Devices (MUTCD) and WisDOT Standard Specifications.

2. Remove and dispose of all traffic control devices at the conclusion of the Project.

3. Maintain traffic to local residents and business at all times, unless a traffic control/detour plan providing for other provisions/access has been prepared and approved by the Town of St. Joseph and, if applicable, St. Croix County.

4. If and where required, flaggers and how they are used shall conform to the requirements set forth in the Wisconsin MUTCD.

5. The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices which become damaged, moved, or destroyed; of all lights which cease to function properly; and of all barricade weights which are damaged, destroyed, or otherwise fail to stabilize the barricades. The traffic control devices shall be checked at least twice daily, including once at the end of the workday for proper alignment, proper visibility, and reflectively to ensure that all traffic control devices required by the construction conform to the MUTCD. The check shall include immediate correction of deficiencies. At least 1 night time inspection shall be made each week.

6. The Contractor shall not deposit materials, store materials, or park equipment on or alongside any roadway open to traffic if it in anyway interferes with the safe flow of traffic. The Contractor shall keep the "open to traffic" sections of roadway free from debris, dirt, etc. at all times. The Contractor shall provide such protective devices as may be necessary to protect traffic and pedestrians from all hazards of drop-offs and openings of any nature, from falling objects, splatter, and other hazards which may exist during construction operations.

7. The Contractor shall provide all signs, barricades, flashers, snow fence, and other means to protect his work and to protect pedestrians using the area abutting his work.

8. Keep all traffic control signs and devices in a legible condition. This shall include but not be limited to removing grime and dust deposited on any device by construction, traffic, or natural causes, or when requested by the Town of St. Joseph or St. Croix County.

END OF SECTION

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TOWN OF ST. JOSEPH

FINAL PROJECT INSPECTION SUMMARY

Stantec

PROJECT NAME: _____ PROJECT LOCATION: _____

DEVELOPER: _____ ENGINEER: _____

CONTRACTOR: _____ SIGNATURE: _____

INSPECTOR: _____ SIGNATURE: _____

DATE: _____

	GENERAL PROJECT & MISC	**DATE**	**INITIAL**
☐	Site Grading Checked and Approved.	_____	_____
☐	Erosion Control Measures Properly Installed and Maintained. Items removed at project completion.	_____	_____
☐	Turf Acceptably Established (30-day growing period).	_____	_____
	STORM SEWER		
☐	Culverts Properly Installed (size, location, marker posts)	_____	_____
☐	Catch Basins/Manholes Properly Installed (size, location, doghouses)	_____	_____
☐	Aprons, Trash Guards, Dissipators, Riprap Properly Installed.	_____	_____
	ROADS		
☐	Sub-base Inspected and Approved	_____	_____
☐	Gravel base Inspected and Approved	_____	_____
☐	Concrete Curb and Gutter Inspected and Approved	_____	_____
☐	Bituminous Pavement Inspected and Approved	_____	_____
☐	Gravel Shoulders Placed (including compaction and sweeping)	_____	_____
☐	Signs and Pavement Markings in Place.	_____	_____
☐	All driveways installed per plan and Inspected and Approved	_____	_____
☐	Trails installed as per plan and Inspected and Approved	_____	_____
☐	Other:	_____	_____

SECTION 01550

TRAFFIC CONTROL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Construction Staging and Traffic Control Plan.

1.02 RELATED SECTIONS

A. Conditions of the Contract, Supplemental Conditions of the Contract, and other Sections of Division 1 apply to this Section.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – latest edition, and all current Supplements (WisDOT):

1. 637 – Signing.

2. 643 – Traffic Control.

B. "Traffic Controls for Construction and Maintenance Operations," Part 6 of the Wisconsin Manual on Uniform Traffic Control Devices (MUTCD) - Latest edition.

1.04 SUBMITTALS

A. Traffic Management and Control Plan:

1. No Work which restricts traffic will be permitted until the submitted Traffic Control Plan and sign layouts have been approved by the Engineer.

1.05 SCHEDULE

A. Conduct construction operations so as to cause minimum interference with traffic during the period of construction prior to partially or fully blocking any roadway in the work area.

B. Provide access to all driveways throughout the Project at all times.

PART 2 – PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

A. Conform to WisDOT Sec. 642.

2.02 SIGNS AND MARKERS

A. Conform to WisDOT Sec. 637.

PART 3 – EXECUTION

3.01 TRAFFIC CONTROL

A. Furnish, install, and maintain in proper order all traffic control devices needed to guide, warn, control, and protect traffic throughout the Site. All traffic control devices and other protective measures shall conform to Wisconsin MUTCD.

B. The Contractor is responsible to maintain all unpaved surfaces. The surface shall be watered and bladed as directed by the Engineer.

C. For general street rehabilitation work on the Project, traffic control shall include but not be limited to Type III barricades with 2 Type A lights and flashers attached to each, established at all intersections of Project streets to adjacent bituminous roadways. A minimum of 1 "Road Closed to Through Traffic" sign, size 48 inches by 48 inches, shall be erected on a barrier at each location:

1. Traffic control shall be established at the start of preliminary work on each street where construction equipment will continuously be present within the public right-of-way, regardless of how far in advance this is of actual removal of bituminous surfacing.

D. Contractor shall also have additional traffic control materials on hand for use in emergency situations. Materials shall include at a minimum:

1. Type III Barricades – 5 each.

2. Type I Barricades With Flashers – 10 each.

3. Traffic Control Drums With Reflectorized Material – 10 each.

4. Orange Traffic Control Cones – 20 each.

E. Remove and dispose of all traffic control devices at the conclusion of the Project.

F. Maintain traffic to local residents at all times.

G. If and where required, flaggers and how they are used shall conform to the requirements set forth in the MUTCD.

H. Lane closures will not be permitted during inclement weather, or any time when, in the opinion of the Engineer, the lane closure could be a hazard to, or unnecessarily delay traffic.

3.02 TRAFFIC WARNING DEVICES

A. The Contractor shall furnish, install, maintain, and remove all warning signs, including advance construction area signing, as required by his sequence of construction or as otherwise required. All signs shall conform to the MUTCD. All warning signs shall be of the type and size required by the sequence of construction and all letters, spacing, borders, dimensions, materials, and other sign details shall be as specified in WisDOT Standard Signs Manual. All signs shall be of metal, either steel or aluminum. All sign and device sheeting shall conform to Standard No. 2, Encapsulated Lens (High Intensity Reflective Sheeting). All safety drums and barricades shall be anchored with enough sand bags to prevent wind from shifting the traffic control devices. All sand bags shall be at ground level. No hand-lettered signs will be approved for traffic control use. All barricades shall conform to the MUTCD.

3.03 SEQUENCE OF CONSTRUCTION AND TRAFFIC CONTROL

A. Within 10 days following approval of the Contract, the Contractor shall provide the Engineer with a planned sequence of construction and traffic control clearly outlining the sequence of operations, streets closed or restricted during any stage of construction, provisions for routing any detoured traffic as permitted, and specific signs and other traffic control devices to be utilized. All sequences of construction shall reflect the following conditions:

1. The Contractor shall provide a method of protecting traffic from open excavation areas. All areas of excavation shall be backfilled at the end of each work day.

2. The Contractor shall prosecute his work in a manner that will allow access to all areas within the Project by fire and police departments. If the Contractor cannot maintain access to any property, he shall notify the Engineer as soon as possible prior to any work in that vicinity and no work shall commence that would impede access until the Engineer has given approval to proceed.

3. The Contractor shall prosecute his work in a manner that will allow means of ingress and egress to all local residents to their properties. If the Contractor cannot maintain access to any property, he shall notify the Engineer as soon as possible prior to any work in that vicinity and no work shall commence that would impede access until the Engineer has given approval to proceed.

4 The Engineer will determine the viability of any planned sequence revisions and may accept, reject, or suggest alterations to the planned sequence. The Contractor may not begin any construction operations without complete approval of the planned sequence of construction by the Engineer:

a. The Contractor may request changes to the planned sequence of construction at any time. No change or deviation will be permitted without approval of the Engineer. If the Contractor wishes to revise the traffic control shown, he shall submit a complete revised Traffic Control Plan to the Project Engineer. All such requests shall be made in writing at least 7 days before the signing for this stage would be put into effect. No such change shall be implemented without the written approval of the Project Engineer. The Engineer shall be contacted 24 hours prior to any changes in traffic control so he/she may oversee the changes.

3.04 INSPECTION OF DEVICES

A. Prior to the start of any construction operations that necessitate lane closures or internal traffic control signing that is the Contractor's or subcontractor's responsibility, the Contractor shall make available for inspection (prior to the installation) his proposed method of traffic control and all traffic control devices to be furnished and used by the Contractor in order to insure conformance with the MUTCD and the WisDOT Standard Sign Manuals. The Contractor shall modify his proposed traffic control methods and/or traffic control devices as deemed necessary by the Engineer.

3.05 IN-PLACE SIGNS

A. The Contractor shall not remove any traffic control signs, except as authorized by the Engineer. Signs and posts authorized for removal necessitated by construction shall be carefully removed and stored by the Contractor or delivered to the Owner as directed by the Engineer. Actual replacement costs will be assessed the Contractor for all signs or posts that are damaged or lost. Where it is necessary to remove "Stop" or prohibition signs on roads open to traffic, the Contractor shall provide qualified flagmen as necessary until such time as the signs are reinstalled or as otherwise directed by the Engineer:

1. Signs which must be removed along roads which are open to traffic and which are necessary for proper warning or regulation of traffic shall be relocated or mounted temporarily to the satisfaction of the Engineer.

2. All signs not being replaced as part of this Contract or being reinstalled by others shall be reinstalled by the Contractor in compliance with the MUTCD, unless otherwise directed by the Engineer.

3.06 MAINTENANCE

A. The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices which become damaged, moved, or destroyed and of all barricade weights which are damaged, destroyed, or otherwise fail to stabilize the barricades. The maintenance of the traffic control devices shall be the responsibility of the Contractor and shall be continuous throughout the term of the Contract, including periods of suspension. The traffic control devices shall be checked at least twice daily, including once at the end of the work day for proper alignment, proper visibility, and reflectivity. The check shall include immediate correction of deficiencies. At least 1 night time inspection shall be made each week. The Contractor should document daily inspection dates and times to be furnished upon request to the Engineer:

1. The Contractor shall keep all traffic control signs and devices furnished by him in a legible condition. This shall include but not be limited to removing any grime deposited on any traffic control devices by traffic, construction, or natural causes. The Contractor shall supply, position, and maintain all of the traffic control devices as shown on the Drawings and described herein. The Contractor will be required to respond to any call from the Owner for maintenance of traffic control devices within 2 hours from the time of notification. The Contractor shall provide a means of receiving calls for maintenance on a 24 hour a day basis throughout the term of the Contract. The Contractor shall furnish the names, addresses, and phone numbers of at least 2 local individuals responsible for traffic control devices to:

    a. The Engineer.

    b. The St. Croix County Sheriff.

    c. The Town of St. Joseph, Wisconsin.

2. For any disruption of traffic, the Contractor shall notify the following at least 48 hours in advance:

    a. The Engineer (651) 636-4600.

    b. St. Croix County Sheriff (715) 386-4701.

    c. The Town of St. Joseph - Board Chair (715) 222-6235.

3.07 OPEN EXCAVATION

A. All open excavations in excess of 2 inches in depth adjacent to the pavement shall be delineated with warning lights at a minimum of 50-foot intervals or as directed by the Engineer. In order to further warn traffic of construction adjacent to the traveled roadway, the Contractor shall furnish, erect, and maintain barricades with appropriate warning signs and warning lights attached at each

work area or at intervals not to exceed 1/4 mile or as directed by the Engineer. The sign shall have the message "NO SHOULDER," "LOW SHOULDER," or "SOFT SHOULDER," whichever is appropriate.

3.08 PARKING

A. The parking of Contractor's or workmen's vehicles within the limits of the construction area in a manner that interferes with the parking of local residents will not be permitted:

1. The parking of Contractor's vehicles that obstruct any traffic control device will not be permitted.

2. Construction vehicles may not be parked on any road over night.

3.09 MATERIALS, STORAGE, AND DEBRIS

A. The Contractor shall not deposit materials, store materials, or park equipment on or alongside any roadway open to traffic if it in any way interferes with the safe flow of traffic, nor shall they be placed within the "clear zone" as determined by the Engineer and as defined by AASHTO's 1977 "Guide for Selecting Locations and Designing Traffic Barriers," unless adequately protected by a traffic barrier.

B. The Contractor shall keep the "open to traffic" sections of roadway free from debris, dirt, etc. at all times. The Contractor shall provide such protective devices as may be necessary to protect traffic and pedestrians from all hazards of drop-offs and openings of any nature from falling objects, splatter, and other hazards which may exist during construction operations.

3.10 PEDESTRIAN TRAFFIC

A. The Contractor shall provide all signs, barricades, flashers, snow fence, and other means to protect his work and to protect pedestrians using the area abutting his work.

3.11 FIELD QUALITY CONTROL

A. Provide a person on a daily basis to inspect and insure that all traffic control devices required by the construction are in accordance with the MUTCD. Any discrepancy between the actual devices in use and the required devices shall be immediately rectified.

B. If at any time the Contractor fails to adequately maintain any of the traffic control devices, the Engineer may proceed to maintain the work and deduct the cost therefore.

3.12 CLEANING

A. Keep all traffic control signs and devices in a legible condition. This shall include but not be limited to removing grime and dust deposited on any device by traffic or natural causes, or when requested by the Engineer.

END OF SECTION

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SECTION 01570

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Managing stormwater runoff and other Project related water discharges to minimize sediment pollution during construction.

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

B. Section 02370 – Permanent Erosion and Sediment Control

C. Section 02920 – Turf Establishment.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – current edition, and all current Supplements (WisDOT Spec.):

1. Section 623 – Dust Control Surface Treatment.

2. Section 628 - Erosion Control.

B. State of Wisconsin "Storm Water Management Technical Standards."

1.04 SUBMITTALS

A. Submit for approval, the plan of operations for accomplishing temporary and permanent erosion control.

B. Furnish a manufacturer's certification stating that the material supplied conforms to the requirements of this Section. The certification shall include or have attached typical results of tests for the specified properties, representative of the materials supplied.

1.05 QUALITY ASSURANCE

A. Erosion Control Supervisor: Provide an Erosion Control Supervisor to direct the erosion control operations and insure compliance with Federal, State, and Local ordinances and regulations.

1.06 SEQUENCING AND SCHEDULING

A. Install sediment control measures prior to grading activities.

B. Schedule and coordinate the Work so that permanent erosion and sediment control BMPs, such as basin construction, riprap placement, and permanent seeding, are directly incorporated into the Work. Supplement permanent erosion and sediment control BMPs with temporary BMPs. Place temporary BMPs when permanent erosion control cannot be achieved. Coordinate construction operations so that erosion and sediment control measures (permanent or temporary) are installed and maintained concurrently with the rest of the Work of the Project.

C. Coordinate and schedule the Work of subcontractors such that erosion and sediment control measures are fully executed for each operation and in a timely manner over the duration of the Project. Develop a chain of responsibility for all subcontractors and operators on the Project.

D. Prior to Project shutdown for the winter or other periods of a week or more, the Site shall be adequately protected from erosion and off the Site damage by covering exposed soils with mulch and establishing perimeter controls.

E. If the Contractor fails to install erosion or sediment measures, the Engineer may withhold payment from related work until the control measures are undertaken by the Contractor:

1. When the Contractor fails to conduct the quality control program, does not conduct the required inspections, or fails to take action ordered by the Engineer to remedy erosion or sediment control problems, the Engineer shall issue a Written Order to the Contractor.

2. The Contractor shall respond within 24 hours with sufficient personnel, equipment, materials, and conduct the required Work or be subject to a **$1,000** per calendar day deduction for noncompliance.

F. Establish permanent turf in accordance with Section 02920 to prevent excessive soil erosion.

PART 2 – PRODUCTS

2.01 SILT FENCE: Conform to the requirements of WisDOT Spec. 628.2.6, or as modified herein.

A. Machine sliced in accordance with Standard Detail Plate ERO-01.

2.02 MULCH: Use straw or hay mulch which conforms to the requirements of WisDOT Section 627.2.

A. Hydromulch may be used if approved by the Engineer.

2.03 INLET PROTECTION: Conform to the requirements of WisDOT Spec 628.2.12.

A. Type FF geotextile fabric.

2.04 TEMPORARY CONSTRUCTION ENTRANCE

A. Rock: 2-inch size (minimum) washed river rock.

B. Woodchip: Raw wood slash only, no chipped up manufactured or chemically treated wood is allowed.

1. Splinter material to an average length of 6 inches with a maximum length of 20 inches. Bark and wood splinters less than 2 inches long shall not exceed 20 percent by mass of the material.

2.05 DITCH CHECKS: Per Details on Drawings.

2.06 FLOATING SILT CURTAIN: Conform to the requirements of WisDOT Spec. 628.2.7.

2.07 DUST CONTROL

A. Water shall be clear and free from suspended fine sediment.

B. Calcium Chloride: Conform to WisDOT Spec. 623.2.3.

C. Magnesium Chloride Solution: Conform to WisDOT Spec. 623.2.2.

PART 3 – EXECUTION

3.01 GENERAL

A. Comply with all applicable laws, ordinances, regulations, permit requirements, orders and decrees pertaining to erosion/sediment control and stormwater discharge during the conduct of the Work.

B. Take necessary precautions against damage to the Project by action of the elements.

C. Take necessary actions to prevent off Site damage resulting from Work conducted on the Project or Project related stormwater runoff.

D. Minimize the amount of disturbed land that is susceptible to erosion at any time. Delineate areas not to be disturbed:

1. Exclude vehicles and construction equipment from area not to be disturbed to preserve natural vegetation

2. Maintain and preserve riparian and naturally vegetated buffer strips (10 feet minimum distance) along water courses.

3.02 INSTALLATION

A. General: Install temporary stormwater management and sediment control devices in conformance with the details, typical sections, and elevations shown on the Drawings.

B. The location of temporary stormwater and sediment control devices may be adjusted from that shown on the Drawings to accommodate actual field conditions and increase the effectiveness of the installation.

C. Silt Fence: Conform to the requirements of WisDOT Spec. 628.3.4 except as modified below:

1. Install in the locations shown on the Drawings or as directed by Engineer using the machine sliced installation method, unless directed otherwise by the Engineer.

2. Use additional measures, such as rock aggregate, placed along the base of the silt fence where the silt fence geotextile cannot be trenched in; i.e. tree roots, frost, bedrock.

3. Use short sections of silt fence placed in J-hook patterns to:

a. Supplement the perimeter silt fence at corner locations and areas where sediment deposition will occur. No more than 100 feet of silt fence shall be installed per 1/4 acre of drainage.

b. Break up flow path along silt fence running across contours to be no more than 100 feet between hooks or as directed by the Engineer.

4. Silt fence longer than 600 feet shall be constructed in separate independent units with each unit having a length less than 600 feet. Avoid splices whenever possible. If necessary, make splices at an opposing fence post and according to the manufacturer's specifications.

D. Mulch seeded areas in accordance with the applicable requirements of WisDOT Section 627 for Method C mulching, except as modified below:

1. For seeded Sites, apply at a rate of 2 tons per acre (4,500 kg/ha).

2. For unseeded Sites, apply at a rate of 2 to 3 tons per acre (4,500 to 6,700 kg/ha), covering the entire soil surface.

3. Distribute mulch evenly by hand or machine and cover the exposed area to a uniform depth.

4. Anchor mulch immediately to minimize loss by wind or water.

3.03 MAINTENANCE

A. Conform to WisDOT Spec. 628.3, except as modified below:

1. Inspect, maintain, and repair any washouts or accumulations of sediment that occur as a result of the grading or construction. Restoration consists of grade repair, turf re-establishment, and street sweeping of mud and debris tracked from the Site.

2. Inspection of all erosion and sediment control items will take place immediately after each runoff event and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

3. Maintain the temporary sediment control devices until they are no longer necessary and are removed:

a. Maintenance consists of keeping the devices functioning properly.

b. Repair or replace plugged, torn, displaced, damaged, or non-functioning devices.

4. Upon final acceptance of the Project and establishment of permanent erosion control measures, remove all temporary erosion control measures.

5. Temporary mulching and temporary seeding/mulching are very effective at controlling erosion. However, this is considered a temporary measure. This measure may need to be re-established several times throughout the duration of the Work.

B. Sediment Removal:

1. If an erosion control device has been reduced in capacity by 30 percent or more, restore such features to their original condition.

C. Control dust blowing and movement on Site and roads as directed by Engineer to prevent exposure of soil surfaces, to reduce on and offsite damage, to prevent health hazards, and to improve traffic safety.

END OF SECTION

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SECTION 02225

REMOVALS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Complete or partial removal and disposal or salvage of at grade, above grade and below grade structures and miscellaneous items.

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – latest edition including all current supplements (WisDOT)

1. 204 – Removing or Abandoning Miscellaneous Structures.

1.04 DEFINITIONS

A. Remove: To take away or eliminate from the Site by any method selected by the Contractor, including disposal of material.

B. Salvage: To dismantle, disassemble, or remove carefully without damage so the item can be re-assembled, replaced, or reused in a workable condition equal to that existing before removal.

C. Abandon: To fill, bulkhead, or close off pipes and structures so that no settlement or flow can occur.

1.05 REGULATORY REQUIREMENTS

A. Conform to WisDOT Section 204, with the following modifications:

1. Dispose of all materials designated for removal outside the Site at locations selected by Contractor.

2. Stockpile or temporarily store materials designated for salvage at locations provided by Contractor.

1.06 SCHEDULING

A. Prior to starting Work, submit for review by the Engineer and approval by the Owner, a schedule showing the commencement, order, and completion dates of the various parts of this Work.

B. Fill holes or depressions resulting from removal or salvage immediately.

C. Provide temporary surface restoration for traffic continuity where removal or salvage operations are completed within streets, driveways, or parking lots.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 GENERAL

A. Dispose of all items removed, except for those items identified to be salvaged or recycled. Said disposal shall be in accordance with all laws, regulations, statutes, etc.

B. Perform removal work without damage to adjacent retained work. Where such Work is damaged, the Contractor shall patch, repair, or otherwise restore same to its original condition at no expense to the Owner.

C. Remove debris from the work area as often as necessary, but not less than at least once at the end of each workday. Debris shall be placed in approved containers to prevent the spread of dust and dirt.

D. Execute the Work in a careful and orderly manner with the least possible disturbance to the public and occupants of buildings.

E. Fill holes resulting from removals consistent with Section 02315.

3.02 EXAMINATION

A. Meet with owners of signs to determine requirements for salvage, storage, and replacement.

B. Develop plan acceptable to Engineer and postal service for maintaining mail service. Temporary relocations of mailboxes will be necessary.

3.03 PROTECTION

A. Take all necessary precautions to adequately protect personnel and public and private property in the areas of Work. All Site fencing shall be in place prior to the start of any removal work.

B. All street signs, traffic control signs, guy wires, mailboxes, posts, wood fence, etc. which may interfere with construction shall be removed, stored safely, and replaced.

C. Approved barriers or warning signs shall be provided as necessary.

D. Provide and maintain temporary protection of existing structures designated to remain where removal work is being done, connections made, materials handled, or equipment moved.

E. Do not close or obstruct walkways or roadways. Do not store or place materials in passageways or other means of egress. Conduct operations with minimum traffic interference.

F. Take reasonable precautions to limit damage to existing turf.

G. Holes or depressions created by removals shall not be left open for more than 1 day. Any hole within 10 feet of sidewalks shall be filled, suitably marked, or covered immediately.

H. Avoid disturbance to any material beyond the limits required for new construction.

3.04 SAWING PAVEMENT

A. Concrete Pavement: Saw along the removal line to a depth of 1/3 of the thickness of the concrete prior to breaking off the pavement.

B. Bituminous Pavement: Saw along the removal line to a minimum depth of 3 inches prior to breaking off the pavement.

3.05 REMOVE CONCRETE PAVEMENT

A. Remove in accordance with WisDOT Section 204.3.2.2, except as modified below.

B. Sawcut concrete pavement and concrete base prior to mechanical pavement removal equipment. Remove concrete in such a manner that the remaining pavement is not damaged.

C. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

3.06 REMOVE BITUMINOUS PAVEMENT, PATH, DRIVEWAY

A. Remove in accordance with WisDOT Section 204.3.2.2, except as modified below.

B. Sawcut bituminous pavement at the removal limits prior to that removal, unless otherwise approved by the Engineer.

C. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

3.07 REMOVE CURB AND GUTTER

A. Sawcut at removal limits.

B. Concrete Curb and Concrete Curb and Gutter: Do not disturb any material beyond the limits required to form for new construction (assumed 12 inches maximum from the back of new Work and 6 inches beyond the edge of new driveways).

3.08 PAVEMENT MILLING

A. Bituminous:

1. Sawcut at removal limits prior to milling process.

2. Mill bituminous surface to the depth specified as shown on the Drawings or as directed by the Engineer.

B. Concrete:

1. Mill surface to the depth specified as shown on the Drawings or as directed by the Engineer.

3.09 REMOVE CONCRETE SURFACING

A. Work includes sidewalks, pedestrian ramps, medians, and driveways.

B. Sawcut concrete surfacing prior to removal.

C. Remove concrete in such a manner that the remaining surfacing is not damaged.

D. When removing existing sidewalks, the Contractor shall not disturb any material beyond the limits required for new construction (assumed as 6 inches maximum beyond and 8 inches maximum below existing grade).

E. When removing existing driveways, the Contractor shall not disturb any material beyond the limits required to form for new construction (assumed 12 inches maximum from the back of new Work and 6 inches beyond the edge of new driveways).

F. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

3.10 REMOVE BITUMINOUS SURFACING

A. Work includes pathways and driveways.

B. Sawcut bituminous surfacing to full depth at the limits of partial removal prior to that removal, unless otherwise approved by the Engineer.

C. Remove bituminous in such a manner that the remaining surfacing is not damaged.

D. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

E. When removing existing pathways and driveways, the Contractor shall not disturb any material beyond the limits required to form for new construction (assumed 12 inches maximum from the back of new Work and 6 inches beyond the edge of new driveways).

3.11 REMOVE MANHOLES AND CATCHBASINS

A. Remove casting and cone section of structures a minimum of 3 feet below final grade.

B. Knock holes in lower section of manhole and fill cavity with granular material.

3.12 REMOVE SECTIONS OF EXISTING PIPE

A. Pipes to be abandoned shall be bulkheaded with brick, non-shrink concrete grout, or concrete block masonry 8 inches thick at the upstream ends, at the downstream ends that connect to catch basins, manholes, and at locations as determined by the Engineer.

B. Pipe to be abandoned shall be filled with suitable material as directed by the Engineer.

C. Pipe to be abandoned shall be removed if the top of pipe is within 3 feet of final surface elevation.

3.13 REMOVE RETAINING WALL

A. Avoid damage to sections of wall to remain.

B. Dispose of materials off Site at a predetermined location.

C. Remove wall in its entirety, including footings and tiebacks.

3.14 SALVAGE AND REINSTALL

A. Signs:

1. In no case shall a traffic sign or street sign be removed or disturbed by Contractor without prior notification being given to Engineer and then only after satisfactory arrangements have been made for a temporary installation or its disposition:

    a. Street identification signage shall be maintained at all times due to its importance to the 911 Emergency Response System.

2. Remove and salvage all posts, A-frame angle brackets, stringers, as well as the nuts, bolts, and washers.

3. Exercise reasonable care against damage to in-place signs during storage and installation.

4. Remove signs damaged during construction and replace with new signs.

B. Mailboxes:

1. Remove and salvage existing mailboxes that interfere with the Work or whose access is restricted by the construction activities.

2. Place at temporary locations as directed by Engineer or as shown on Drawings.

3. Removal, temporary re-installation, and replacement shall occur such that mail delivery is not interrupted.

4. Reinstall in locations as shown on Drawings or as directed by Engineer.

5. Mailboxes, posts, and appurtenances damaged during construction shall be replaced with new at no charge to Owner.

C. Fences:

1. Salvage and store fence and post material where they are in conflict with the Work.

2. After completion of Work, reinstall fence to the condition existing prior to removal.

3. Install temporary snow fence or similar barrier at the end of the working day while the permanent fence is removed.

D. Culverts and Flared End Sections:

1. Where possible, salvage existing pipe in areas to be disturbed by the construction.

2. Reinstall in original condition and location as shown on the Drawings.

3. If requested by the Owner, deliver salvaged material to Owner's Maintenance Facility.

3.15 FIELD QUALITY CONTROL

A. Items damaged during removal or salvaging operations shall be replaced with new material of equal type and quality of the damaged item when it was new.

3.16 DISPOSING OF MATERIAL

A. Dispose of all materials outside of the Site at disposal location selected by Contractor in compliance with state and local regulations. Burying of material and debris is not allowed within the Site.

END OF SECTION

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SECTION 02230

SITE CLEARING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Clearing and grubbing of trees within the clearing limits, and stripping and stockpiling of sod and topsoil.

B. Stripping, stockpiling, and placing topsoil.

1.02 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – current edition and all current Supplements (WisDOT Spec.):

1. 201 - Clearing and Grubbing.

2. 202 – Roadside Clearing.

1.03 DEFINITIONS

A. Brush: All bushes, shrubs, and other vegetation that can be cut with a brush scythe or mowing machine, including small isolated trees having a diameter of 4 inches or less at a point 2 feet above the ground surface.

B. Clearing: Cutting and removing trees, shrubs, bushes, windfalls, and other vegetation in the designated areas.

C. Grubbing: Removing and disposing of stumps, roots, and other remains in the designated areas.

D. Tree Trimming/Pruning: Cutting broken, damaged, or obstructing branches and installing wound dressing.

1.04 QUALITY ASSURANCE

A. Burning: Conform to all local regulations.

1.05 WORK CONDITIONS

A. Work consists of removing trees generally along the road alignment to provide for its construction, based on construction limits shown on the Drawings.

B. Protect specimen trees close to work that are designated by the Engineer to remain.

1.06 SEQUENCING AND SCHEDULING

A. Complete the work of this Section before or sufficiently ahead of on-going rough grading, excavation, backfill, and compacting for utilities.

B. Install temporary erosion control measures after the work of this Section.

PART 2 – PRODUCTS

2.01 WOUND DRESSING

A. Asphalt based tree paint.

B. Other acceptable materials per Engineer's approval.

PART 3 – EXECUTION

3.01 GENERAL

A. Review removals in the field with the Engineer prior to doing Work. Clearing limits will be clearly marked by the Engineer.

B. Assume multiple mobilizations for the work of this Section.

3.02 CLEARING AND GRUBBING

A. Clear and grub all trees and brush within the construction limits (daylight lines) as directed by the Engineer.

B. As directed by the Engineer, trim trees that are to be saved but interfere with the proposed construction. Paint all cuts with wound dressing.

C. All depressions resulting from the grubbing operations shall be backfilled with suitable material and compacted.

3.03 STRIPPING

A. After clearing and grubbing have been completed, strip topsoil to a line 2 feet outside of the daylight lines.

B. Stockpile sufficient topsoil to re-spread at a uniform depth of 4 inches to all disturbed areas identified for seeding:

1. Do not strip within the drip line (branch spread) of trees identified to remain.

2. Do not haul topsoil in from off the Site, unless there is not enough existing topsoil to place 4 inches thick.

3.04 DISPOSAL

A. Dispose of all timber and debris in accordance with WisDOT Spec. 201.3.

3.05 PROTECTION

A. Conduct operations so as not to damage surrounding private property.

B. Protect trees intended to be saved from injury or defacement during operations.

END OF SECTION

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SECTION 02280

ADJUST MISCELLANEOUS STRUCTURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Adjusting catch basin, manhole and inlet covers.

1.02 RELATED SECTIONS

A. Section 02630 – Storm Drainage.

B. Section 02740 – Hot Mix Asphalt Pavement.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest edition including all current supplements (WisDOT):

1. 611 – Catch Basins, Manholes, and Inlets.

B. American Society of Testing and Materials (ASTM):

1. A48 – Specification for Gray Iron Casting.

2. A240 – Specification for Heat – Resisting Chromium – Nickel Stainless Steel Plate Sheet and Strip for Pressure Vessels.

3. C6 – Specification for Normal Finishing Hydrating Lime (Mortar).

4. C141 – Specification for Hydraulic Hydrated Lime for Structural Purposes (Mortar).

5. C150 – Specification for Portland Cement (Concrete Rings/Mortar).

6. C923 – Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Materials.

7. D1248 – Polyethylene Plastics Molding and Extrusion Materials.

1.04 DEFINITIONS

A. Adjusting Catch Basin, Manhole and Inlet Covers: A change in rim elevation accomplished for catch basins, manholes or inlets through the addition or removal of

adjustment rings only. Adjustment does not include the addition or removal of sections from the structure.

1.05 SEQUENCING AND SCHEDULING

A. Contractor, Engineer and Owner shall inspect all existing structures prior to beginning construction.

B. Owner will remove any foreign material found in the existing structures prior to construction. Contractor is responsible for removing any foreign material that enters the structures during construction.

PART 2 – PRODUCTS

2.01 ADJUSTING RING

A. Concrete:

1. Size to match cone or opening in top slab.

2. Concrete Compressive Strength: Minimum 3000 psi.

3. Reinforcing: Single hoop 8 gauge steel wire.

4. Total Adjusting Ring Thickness: Minimum 3 inches, maximum 12 inches.

2.02 ADHESION MATERIALS

A. Ram-Nek material, or approved equal.

B. Mortar:

1. Standard Portland Cement: Type I, ASTM C150.

2. Normal Finishing Hydrated Lime: ASTM C6.

3. Hydraulic Hydrated Lime for Structural Purposes: ASTM C141.

4. Mix Proportions: 1 part cement to 3 parts mortar sand; lime may be added to mixture: maximum amount 15 percent by volume.

2.03 FRAMES, GRATES AND LIDS

A. Manhole, Catch Basin Frames, and Covers:

1. Requirement: ASTM A48.

2. Material: Class 35 cast iron. Best grade. Free from injurious defects and flaws.

3. Finish: Coal tar pitch varnish.

4. Finish Preparation: Sandblast.

5. Machine cover and frame contact surface for non-rocking protection.

6. Type and Style: NEENAH R1642, Type "B" Lid, or approved equal, for sanitary and storm sewer manholes, and NEENAH R3067, Type "V" or "VB" (Low Points) Grate, or approved equal, for storm sewer catch basin manholes and catch basins. Covers without grate openings stamped with "SANITARY SEWER" or "STORM SEWER" as appropriate. Use 2 inch letters.

2.04 GEOTEXTILE

A. Woven filter fabric, 4-1/2 ounce for use in conjunction with adjustment rings.

PART 3 - EXECUTION

3.01 GENERAL

A. The necessary vertical alignment will be determined by the Engineer and generally as indicated on the schedule of adjustments.

B. Where existing frame is within 0.10 feet of plan grade, no adjustment is to be made.

C. The frame shall be raised or lowered to match the street or gutter.

D. Protect existing structures from damage.

E. Prevent sand, concrete, or any other debris from entering the structures.

3.02 PREPARATION

A. Call utility owners to field mark their utility locations.

B. Contractor shall verify exact location of existing utilities.

3.03 ADJUSTING CATCH BASIN, MANHOLE AND INLET COVERS

A. Remove all dirt, debris, dust, and other deleterious material from surface prior to placement of first adjusting ring.

B. Concrete Adjusting Ring:

1. Mortar on top and bottom surfaces of all concrete adjusting rings; between surface of top slab or cone and bottom ring; between surface of top ring and casting; on entire surface of area of ring with no gaps:

a. Mortar Thickness: 1/4 to 1/2 inch.

2. No shims of any material allowed.

3. Required cross slope of casting to be achieved by varying thickness of mortar.

4. Do not plaster the inside surface of rings.

5. Wipe clean all excess mortar from the joints inside all rings and frame.

6. Remove all mortar spills from the structure.

7. Use a 6 inch ring where applicable.

3.04 FIELD QUALITY CONTROL

A. For adjustments made within bituminous surfaced areas, any settlements of the bituminous surface greater the 3/8 inch below the rim of the adjustment structure will require removal and replacement of the bituminous surfacing at the Contractor's expense.

B. Secure manholes and structures immediately after completion or before suspension of operations at the end of working day with castings or suitable alternative device.

C. Adjust manholes and catch basin frames 1/2 inch below grade prior to placing the final wear course. Thorough tamping of the material around manhole and catch basin frames is required. Where existing frame is within 0.10 feet of plan grade, no adjustment is to be made. In such cases, the crown or gutter shall be either lowered or raised, as the case may be, to put the street and frame at the same grade.

D. Adjust frame upward with standard concrete adjustment rings of the same size as the cone or slab opening. Place each adjustment ring and frame in a full mortar bed. Adjusting rings needed to raise the casting to grade shall be incidental to the adjustment item.

E. Adjust frame downward by removing the necessary number of adjustment rings from the structure and resetting the frame in a full mortar bed to grade.

F. Regardless of the direction of adjustment, no shims of any material will be allowed. The minimum thickness of all mortar joints shall be at least 1/4 inch with a maximum allowable thickness of 1/2 inch. All excess mortar from the joint shall be wiped clean

from the inside of all rings and frame. All manhole castings must be replaced prior to the placing of the final wear course.

G. All bituminous or concrete pavement shall be saw cut square (diamond-shaped relative to the roadway), full depth through. Compaction of the gravel base shall be accomplished via a vibratory plate compactor.

H. Adjust manholes to 1/2 inch below grade being proposed for the Winter Season. No burying of manholes will be allowed over the Winter Season. All structures shall be readjusted prior to placement of bituminous surface course.

I. Utilize 1/2 inch thick circular plates on manholes for all paving of streets, driveways, paths, and parking areas.

J. Clean all lids of all gravel, bituminous, or concrete during paving operations while bituminous is hot and/or concrete is plastic.

END OF SECTION

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SECTION 02315

EXCAVATION AND FILL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Excavation and fill for roadways, foundations, channels, ponds, and other areas.

1.02 RELATED SECTIONS

A. Section 02318 – Subgrade Preparation.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – most current edition including all current supplements (WisDOT):

1. Section 205 – Roadway and Drainage Excavation.

2. Section 207 – Embankment.

3. Section 209 – Granular Backfill.

4. Section 211 – Preparing the Foundation.

1.04 SUBMITTALS

A. Submit the following items:

1. Gradation tests for borrow materials.

1.05 DEFINITIONS

A. The definitions of the different classifications of excavation and borrow material shall conform to WisDOT Spec. 205.2, or as modified herein:

1. Grading Grade: Bottom of the aggregate base as shown on the Drawings.

2. Common Excavation: In locations where the design cross-section is in a cut section, common excavation shall be classified as all excavation below the grading grade. In areas where the design cross-section is in a fill section, common excavation shall consist of excavation below topsoil stripping.

3. Subgrade Excavation: Excavation and removal of soft and unstable soils within an established rough graded section.

1.06 QUALITY ASSURANCE

A. Assist testing laboratory by excavating for density tests. Assist testing laboratory with obtaining material samples.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Granular Backfill:

1. Conform to WisDOT Spec 209.2.2, Grade 2.

PART 3 - EXECUTION

3.01 GENERAL

A. Conform to the following:

1. Establish traffic control prior to excavations.

2. Establish the specified erosion control devices according to WisDOT Section 628 – Erosion Control and Town of St. Joseph Standard Detail Plates, prior to all excavations.

3. Notify utility companies of progress schedule so they can accomplish relocations, removals, and holding of lines.

4. Strip topsoil in all areas required prior to performing any excavation.

3.02 PREPARATION OF EMBANKMENT

A. Conform to WisDOT Spec. 207.3, or as modified herein:

1. Engineer's approval is required of all areas where preparation work has been performed prior to the placement of the embankment or fill material.

2. Where embankment is to be constructed over locations where the foundation material is unstable, the foundation shall be excavated to remove all or part of the unstable material.

3. Use selected borrow material for upper portions of subgrade where subgrade excavation areas are performed.

3.03 EXCAVATION OPERATIONS

A. Conform to WisDOT Spec. 205.3 and 208.3, or as modified herein:

1. Perform excavations to grade as shown on the Drawings.

2. Excavation of unstable material below grade shall be done under the direction of the Engineer as the subsurface conditions are disclosed.

3. Remove muck excavation material by utilizing a backhoe, so as to minimize disruption to the bottom of the excavation.

4. No solid rock will be allowed within 12 inches of the subgrade.

6. Provide and maintain temporary drainage facilities until permanent facilities are completed.

7. Cut, fill, and grade Project Site to elevations and contours shown on the Drawings, with allowances for pavements, topsoil, and structures.

3.04 DISPOSITION OF EXCAVATED MATERIAL

A. Conform to WisDOT Spec. 205.3.10 and 205.3.11, or as modified herein:

1. Strip topsoil prior to any excavation.

2. Stockpile topsoil at a location on Project Site.

3. Excavated material not used for embankments shall be disposed of off Project Site or as directed by the Town Engineer.

3.05 PLACING EMBANKMENTS

A. Conform to WisDOT Spec. 207.3.

3.06 COMPACTING EMBANKMENTS

A. Conform to WisDOT Spec. 207.3.6.3 and WisDOT Spec. 207.3.6.2, or as modified herein:

1. Compaction required for embankment materials shall conform to the Specified Density Method with the testing location and rates being determined by the Town Engineer.

3.07 FINISH OPERATIONS

A. Conform to WisDOT Spec. 211.

END OF SECTION

SECTION 02318

SUBGRADE PREPARATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Grading, shaping, and compacting subgrade prior to placing a base or surface course.

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. Section 205 – Roadway and Drainage Excavation.

2. Section 207 – Embankment.

3. Section 208 – Borrow.

4. Section 211 – Preparing the Foundation.

1.04 SEQUENCING AND SCHEDULING

A. Subgrade preparation shall be performed on the existing materials in the roadway prior to placement of the granular borrow.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 GENERAL

A. Subgrade preparations shall be performed to produce the required density, grade, and cross-section.

3.02 PREPARATION

A. Subgrade shall conform to the requirements of WisDOT Spec. 211.3.2.

B. Inspection of subgrade by test rolling:

1. The equipment used for test rolling shall be a Tandom Truck with a gross weight of 45,000 pounds.

2. The roadbed will be considered unstable if yielding and rutting is greater than 1-1/2 inches.

3. Make corrections to unstable subgrade by replacing unstable material with select granular borrow material as directed by the Town Engineer.

3.03 COMPACTION

A. Conform to WisDOT Spec. 207.3.6.3, or as modified herein:

1. For the Specified Density Method, the Town Engineer will sample and test the soils to determine the Maximum Density and Optimum Moisture.

2. Compact the subgrade to 95 percent of the determined Maximum Density when more than 3 feet below the final grade. Compact the subgrade to 100 percent of the determined Maximum Density when less than 3 feet below the final grade.

3. Density and moisture tests will be taken on the compacted subgrade, at the location and testing rates designated by the Town Engineer. Nuclear density testing shall be considered an approved method.

END OF SECTION

SECTION 02320

EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Trenching requirements for storm sewers and appurtenances including requirements for excavation, backfill, and compaction.

B. Identification of Contractor Responsibilities For: Bracing, shoring, and sheeting; protection of the excavation and Project Site; working around existing utilities and other obstructions; and excesses and shortages of backfill.

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

B. Section 02630 – Storm Drainage.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest edition, including all current supplements (WisDOT):

1.04 DEFINITIONS

A. Bedding: The soil material adjacent to the pipe which makes contact with the pipe foundation, walls of the trench, and upper level of backfill. The general dimensions of the bedding zone are illustrated on Detail Plate No.'s BED-1 and BED-2. The purpose of bedding is to secure the pipe to true line and grade and to provide structural support to the pipe barrel.

B. Foundation: Soil material beneath the pipe bedding.

C. Improved Pipe Foundation: Foundation provided by importing material from sources outside the Project Site. Required when foundation is soft or unstable.

D. Rock Excavation: Includes such rocks that are not decomposed, weathered or shattered, and which will require blasting, barring, wedging, or use of air tools for removal. Also included are any boulders, concrete, or masonry structure (except concrete pavement, curb and gutter, and sidewalk) exceeding 1 cubic yard.

E. Pipe Zone: That part of the trench below a distance of 1 foot above the top of the pipe.

F. Sand Cushion: Aggregate bedding material used around pipe in areas where rock excavation is encountered, where pipe insulation is used, and when crossing existing utilities.

1.05 SEQUENCING AND SCHEDULING

A. Known existing underground utilities are shown on the Drawings in a general way. Owner does not guarantee the locations as shown on the Drawings. Contractor shall anticipate variations in both the vertical and horizontal locations of underground utility lines from those shown on the Drawings.

B. Uncover utilities and verify both horizontal and vertical alignments sufficiently in advance of construction to permit adjustments in the work. Determine location of existing utilities and identify conflicts before excavating trench for pipe installation.

C. Notify Digger's Hotline (1-800-242-8511) before starting construction in a given area, requesting utility locations in the field.

D. Provide continuance of flow of existing sewer and other facilities.

E. Backfill all trench excavations promptly after the pipe is laid.

1.06 WARRANTY

A. Trench settlements which occur during the warranty period that are greater than 1 inch as measured by a 10 foot straight edge will be repaired by the Contractor in a manner that is acceptable to the Owner at the Contractor's expense.

PART 2 - PRODUCTS

2.01 PIPE BEDDING MATERIAL

A. Polyvinyl Chloride (PVC) Pipe and High Density Polyethylene (HDPE) Pipe:

1. Comply with WisDOT Spec. 209.2.2, Grade 2 for granular borrow.

B. Ductile Iron Pipe (DIP) and Reinforced Concrete Pipe (RCP):

1. Class C-1 Bedding:

a. Undisturbed soil.

2.02 IMPROVED PIPE FOUNDATION MATERIAL

A. Comply with WisDOT Spec. 501.2.5:

1. Fine Aggregate: Use a well-graded fine aggregate conforming to the size requirements of WisDOT Spec. 501.2.5.3.4.

2. Course Aggregate: Use a well-graded fine aggregate conforming to the size requirements of WisDOT Spec. 501.2.5.4.4.

2.03 BACKFILL MATERIAL

A. Suitable materials selected from the excavated materials to the extent available and practical.

B. Suitable materials are mineral soils free of rubbish, trees, stumps, branches, debris, frozen soil, oversize stone, concrete and bituminous chunks, and other similar unsuitable material.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect existing utility structures and surface features with the Engineer and document condition.

B. Re-inspect foundation soils if rain fall or snow has occurred after initial inspection but prior to placing pipe and bedding.

C. Verify with Engineer that all permits and easements necessary to do the work are obtained.

D. Verify that all erosion control facilities are in place.

3.02 PREPARATION

A. Call diggers hotline (1-800-242-8511) to have utility owners field mark their utility locations and verify exact location of existing utilities.

B. Protect as necessary surface features, such as utility poles, trees, structures, pavement, etc., that are not designated on the Drawings to be removed.

C. Notify utility companies of progress schedule so they can accomplish any necessary relocations and removals that they have agreed to relocate, remove, or support.

D. Implement traffic control.

E. Complete temporary removal or relocation of surface features, such as fences, shrubs, signs, and mailboxes.

F. Strip off existing topsoil from within the trench excavation limits and stockpile adjacent to the Project Site for respreading. Separate vegetation stripping from salvageable topsoil and dispose of as appropriate.

G. Crossing Under Existing Utility Lines:

1. Use extreme care when excavating in the vicinity of underground utility lines to avoid damage to protective coatings or surfaces.

2. Where possible and as authorized by the utility, temporarily remove the utility line, install the new pipe, and reinstall the utility line.

3. Where existing line cannot be removed or is not feasible to remove, securely support, excavate under, backfill under and around the utility line to 95 percent of maximum density.

4. Report and repair damaged lines prior to backfilling trench.

3.03 CONSTRUCTION

A. Excavation:

1. Trench Construction:

a. Excavate trench to alignment and grade shown on the Drawings and staked by the Engineer.

b. The trench width at the surface may vary and depend upon the depth of trench and the nature of the excavated material encountered. However, it shall be of ample width to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted properly.

c. Minimum width of unsheeted trench is 18 inches, except for pipe 10 inches or larger wherein the minimum width will be at least 1 foot greater than nominal diameter of the pipe.

d. Correct any part of the trench that is inadvertently excavated below grade with approved material compacted to 95 percent of maximum density.

e. Brace, shore, or sheet and drain trench so that workmen may work safely. Comply with applicable State Regulations relating to industrial safety to a safe angle of repose. Angle of repose may

be no less than that required by State Regulations or the requirements of the Occupational Safety and Health Act (OSHA), whichever is most restrictive.

f. Pile all excavated material in a manner that will not endanger or damage trees designated to be saved.

g. Pile all excavated material in a manner that will not endanger the work or obstruct sidewalks, driveways, gutters, etc.

h. Segregate soils in the excavated material that are not suitable for trench backfill and dispose of in a manner that is consistent with the requirements specified herein under "Backfill Above Pipe Zone."

i. Dispose of excess excavated materials off of right-of-ways and easements in a suitable site selected by the Contractor.

j. Haul materials, other than natural soil materials that are suitable as backfill material, to an approved landfill as directed by the Engineer.

2. Leave trench sheeting or bracing in place until pipe has been laid, tested, repaired (if necessary), and the backfill placed and compacted to a depth of 1 foot above the top of the pipe. Written permission by the Engineer is necessary prior to removal.

3. Dewater the ground as necessary to excavate the trench and install the pipe and structures.

4. Direct all surface and groundwater discharges to natural drainage channels, drains, or storm sewers.

5. Excavate to a sufficient depth to insure adequate foundation when the bottom of the trench is soft or where in the opinion of the Engineer unsatisfactory foundation conditions exist. Bring excavation up to pipe grade with thoroughly compacted granular materials meeting the requirements of Improved Foundation Material.

6. Provide temporary support, remove, relocate, or reconstruct existing utilities located within the trench excavation as necessary. Utility Owner shall designate method employed. Use particular care and provide compacted fill or other stable support for utility crossings to prevent detrimental displacement, rupture, or failure.

7. Excavate to expose existing utilities that cross in close proximity to the planned pipe line to determine the utility's exact location sufficiently ahead of pipe installation to plan for the avoidance of grade conflict.

Engineer will assist in the measurements to determine the utilities' location relative to the planned pipe line location. A deviation from the alignment, grade, and location to avoid conflict may be ordered by the Engineer with Town Engineer's approval if in his opinion an alternate alignment, grade, or location is more feasible. Plan the work with the Engineer at the pre-construction conference and coordinate the activities as necessary during the course of work progress.

8. In locations where rock affects the pipe foundation, excavate the trench 6 to 12 inches below the pipe and place sand cushion material up to the proposed invert elevation. The remainder of the trench up to the top of rock elevation shall be backfilled with granular backfill material meeting the requirements of Part 2.03.B of this Section:

    a. Sand Cushion: The removal and disposal of the unsuitable material within the trench and below the invert elevation, and the replacement up to invert elevation with the appropriate bedding material.

    b. Granular Backfill: The removal and disposal of unsuitable material within the trench, above the invert elevation, and replacement up to the surface with appropriate backfill material. No additional compensation will be allowed for wider or deeper trenches in rock excavations.

    c. For PVC and HDPE Pipe, the sand cushion shall be placed to 1 foot above the pipe and shall be paid as pipe bedding. The remainder of the trench up to the top of the rock shall be backfilled with granular backfill material.

9. Install and maintain barricades, guards, and warning lights as necessary to protect persons from injury and to avoid property damage.

B. Backfill In the Pipe Zone:

1. Bed polyvinyl chloride (PVC) pipe in accordance with ASTM D2321 and Detail Plate No. BED-2. If native soil does not comply with Article 2.01.A of this Section, supply material of the specified quality from other sources. Give special attention to compacting the backfill material around the pipe to at least 95 percent of maximum density to a distance of 1 foot above the top of pipe.

2. Bedding for DIP is Type C-1 as outlined on Detail Plate No. BED-1.

3. For Type C-1 bedding, use only selected materials free from rock, boulders, debris, or other high void contact substances to a level 1 foot above the top of pipe. Remove ledge rock, boulders, and large stones to provide at least 6 inch clearance from pipe.

4. Dig bell holes of ample dimension in the pipe bedding at each joint, such that the pipe barrel rests continuously on the bedding.

5. Place backfill completely under the pipe haunches in uniform layers not exceeding 4 inches in depth. Carefully and uniformly tamp each layer to eliminate the possibility of lateral displacement and to provide uniform support under the pipe haunches.

6. Bed pipe in rock excavation with thoroughly compacted granular material listed in 2.01.A.

C. Backfill Above Pipe Zone:

1. Backfill with suitable materials selected from the excavated materials to the extent available and practical.

2. Suitable materials are mineral soils free of rubbish, trees, stumps, branches, debris, frozen soil, oversize stone, concrete and bituminous chunks, and other similar unsuitable material.

3. Place backfill materials in uniform depth layers not to exceed 8 inches before compaction. Acceptably complete the compaction of each layer before placing material for the succeeding layer.

4. Compact each layer by mechanical means until it meets the requirements of WisDOT Section 207.3.6.3, "Special Compaction," except that the upper 3 feet of the subgrade in roadway areas shall be compacted to 100 percent of maximum density.

5. The Engineer has full authority to suspend the placement of additional backfill materials if the preceding layer has not been compacted and its surface properly leveled.

6. The method and means of placement and type of compaction equipment used is at the discretion of the Contractor. However, all portions of the trench backfill must meet minimum specified compaction requirements.

7. Any deficiency in quantity of backfill material caused by shrinkage or settlement will be supplied by the Contractor at no additional cost to the Owner.

8. Excavated material not suitable or required for backfill is to be disposed of by the Contractor outside of the Project Site at a disposal location of his choosing.

3.04 FIELD QUALITY CONTROL

A. The Engineer will have an independent testing company sample and test the soils that are to be used to determine the Maximum Density and Optimum Moisture, and to make density and moisture tests on the compacted backfill. The rate and location of such tests shall be at the discretion of the Engineer.

B. Assist the Engineer with testing by excavating for density tests where, when, and in the manner prescribed by the Engineer. Assist with obtaining material samples when requested.

C. Failed density test areas shall be excavated and re-compacted until the density requirements are met.

END OF SECTION

SECTION 02370

PERMANENT EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Restoration of construction area by establishment of permanent vegetation.

B. Installation, inspection, and maintenance of permanent soil stabilization systems.

C. Installation, inspection, and maintenance of permanent sediment control BMP's.

D. Removal of temporary erosion and sediment control BMP's.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - most current edition including all current supplements (WisDOT):

1. Section 628 - Erosion Control.

B. Wisconsin Construction Site Best Management Practice Handbook.

1.03 DEFINITIONS

A. Weed Free: Organic materials used for vegetation establishment or soil stabilization that are certified to contain less than a specified amount of plant or seed material from undesirable species such as thistle and leafy spurge.

1.04 SUBMITTALS

A. Submit at least 2 days prior to application seed bag tags for non-native seed mixes indicating the contents are in conformance with Specifications.

1.05 REGULATORY REQUIREMENTS

A. Comply with Regulatory Agency Requirements for fertilizer and herbicide compositions.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Seed:

1. Seed shall be delivered in sealed, undamaged bags.

2. Seed shall be delivered in air-dried condition.

3. Store Seed Properly:

a. 50 degrees F.

b. 50 percent humidity.

B. Mulch:

1. Mulch shall be delivered in air-dried condition.

2. Protect mulch from damage from moisture.

1.07 WARRANTY

A. Provide a warranty on work of this Section for a minimum of 12 months, including 1 continuous growing season. Commence warranty once work is complete as certified by the Town.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Mulch: Conform to WisDOT Spec. 627.

B. Seed: Conform to WisDOT Spec. 630:

1. Seed Mixture No. 20 and 40 as specified.

C. Erosion Mat:

1. Shall conform to the requirements of WisDOT Spec. 628.2. Erosion Mat:

a. Staples: U-shaped, 8 inch, 11 gauge metal staples, or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that sub-soils have been graded and compacted to the correct elevations.

B. Verify the soil preparation has been completed such that success of vegetation will be maximized.

C. Commencement of work in this Section implies prior acceptance of Project Site conditions by the Town.

3.02 SEQUENCING AND SCHEDULING

A. Restoration and Final Stabilization:

1. Final stabilization will be completed within 5 calendar days of completion of final grading operations or by end of day Friday, whichever is sooner. Restoration and final stabilization consists of:

a. Seed and mulch.

b. Seed and blanket.

c. Installation of permanent structural ESC BMP's.

2. Final stabilization may be done after 5 days after final grading only if a protective layer of straw mulch or other soil protection approved by Town is applied within the 5 day period, and only when approved by Town.

B. Apply seed and install all other permanent BMP's per Specifications found in Paragraph 3.04 - Installation.

C. Protect established turf areas during operations and repair damaged ones resulting from operations.

D. In or near wetland areas, as directed by the Town, final grading shall be done such that these areas will be restored to original grade and elevation.

3.03 EROSION AND SEDIMENT CONTROL PLAN

A. The Town Engineer and St. Croix County LWCD will inspect the ESC measures, inform the Contractor of required maintenance, and maintain written records of the inspections.

3.04 INSTALLATION

A. Soil Preparation:

1. Native topsoil will be stripped and stored separately.

2. Conform to WisDOT Spec. 625.3.

3. Scarify subsoil to a depth of 4 inches where topsoil is to be placed.

4. Topsoiling:

a. A layer of native topsoil at least 4 inches thick shall be replaced on all areas to be restored with permanent vegetation.

b. Fine grade topsoil eliminating rough or low areas. Maintain profiles and contour of subgrade while spreading.

c. Rake to remove roots, weeds, large soil clods, rocks over 3 inch size, and foreign material.

d. Manually spread topsoil close to trees, plants, and structures to prevent damage.

e. Remove surplus subsoil and topsoil from Project Site.

f. Final grading shall be performed perpendicular to the contours of the slope (up and down the hill).

B. Seed Application:

1. General:

a. Seed having any type of damage from moisture will not be used.

2. Rate of Application: WisDOT Spec. 630.3.3.5.

3. Slope/Method:

a. Slopes 3:1 or steeper shall be seeded by a "seed and stabilize" method specified below.

b. Slopes flatter than 3:1 shall be seeded by the "seed and mulch" method specified below.

C. Seed and Mulch:

1. Prepare soil as specified in Paragraph 3.04.A.

2. Apply seed at rates specified in Paragraph 3.04.B and according to the seed type coverage shown in the Drawings.

3. Seed will be installed conforming to WisDOT Spec. 630.3.3:

a. If Method A is utilized, seed will be distributed using a "cyclone" type broadcaster.

b. Mulch will conform to WisDOT Method C Specifications, will be applied with blower equipment, and will be disc anchored immediately after placement.

c. Fertilizer is not required.

4. Apply water with a fine spray immediately after each area has been mulched at a rate that will not cause surface runoff and erosion. Keep seed moist until it germinates.

D. Seed and Stabilize (Erosion Mat):

1. Prepare soil as specified in Paragraph 3.04.A.

2. Apply seed at rates specified in Paragraph 3.04.B and according to the seed type coverage shown in the Drawings:

a. Seed shall be installed prior to blanket installation using a cyclone type broadcast seeder.

b. The Project Site shall be harrowed or raked parallel to the slope contours following seeding.

3. Install erosion mat in accordance with the appropriate provisions of WisDOT Spec. 628.3.2 and in accordance with manufacturer's specifications immediately following seeding with the following minimum requirements:

a. Unroll the blanket from the top to the bottom of the slope.

b. Wire staples (11 gauge, 8 inch) shall be installed in 36 inch on-center intervals through the surface area of the blanket.

c. A leading anchor trench shall be placed at the top of the slope and shall be a minimum of 6 inches deep with stapling (in the trench) at 18 inch intervals.

d. Leading and terminal sides of the blanket shall be stapled along the edge in 18 inch intervals.

e. Overlap adjacent side edges and end-to-end edges (shingle) a minimum of 6 inches and staple at 18 inch intervals.

E. Failure to install permanent erosion control measures in compliance with these Specifications will result in denial of Town acceptance.

3.05 PROTECTION

A. All temporary and permanent erosion and sediment control BMP's shall be protected from potential damage due to continued operations.

B. Vehicle, equipment, and continual/concentrated pedestrian traffic across seeded areas are prohibited.

3.06 MAINTENANCE

A. Begin maintenance immediately after installation.

B. When directed by the Town, re-mulch or any areas on which the original mulch has eroded, washed away, or blown off, and reseed any areas on which the original seed has failed to grow, using the seed mixture shown on the Drawings.

C. Repeat scarification of subsoil and other necessary soil preparation measures in areas where equipment used for hauling and spreading topsoil has compacted the subsoil or previously placed and prepared topsoil. Repeat soil preparation due to compaction from construction activities.

D. Repeat soil preparation, seeding, and specified covering of exposed soil where an excess rain event has washed away top soil, seed, and soil cover.

E. Watering of seeded areas for a period of 30 days from installation, sufficient to ensure establishment of permanent vegetation is required.

3.07 PROJECT CLOSEOUT

A. Cleanup and Restoration:

1. Keep pavements clean and work area in an orderly condition.

2. Collect and dispose of all excess materials, packaging, and containers.

B. All wetland areas shown in the Drawings which are disturbed by activities associated with this Project Site shall be final graded to their original contours.

C. Unless required to remain in place by any landowner or permitting authority, all temporary non-degradable ESC measures shall be removed no more than 1 month after final stabilization has been approved by the Town.

D. After final stabilization has been approved by the Town, all permanent BMP's shall be cleaned out (sediment removal) by the Contractor to provide the original storage volume.

END OF SECTION

SECTION 02630

STORM DRAINAGE

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Storm sewer pipe, manholes, catch basins, and appurtenances.

B. Riprap.

1.02 RELATED SECTIONS

A. Section 02280 – Adjust Miscellaneous Structures.

B. Section 02320 – Excavating, Backfilling, and Compacting for Utilities.

C. Section 02720 – Aggregate Base Course.

D. Section 02770 – Concrete Curb and Gutter.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. Section 521 – Corrugated Steel Pipe Culverts.

2. Section 606 – Riprap.

B. American Society of Testing and Materials (ASTM):

1. A48 – Specification for Gray Iron Castings.

2. A153 – Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

3. A615 – Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

4. A760 – Specification for Corrugated Steel Pipe, Metallic – Coated for Sewers and Drains.

5. C76 – Specification for Reinforced Concrete Culvert, Drain, and Sewer Pipe.

6. C150 – Specification for Portland Cement.

7. C206 – Specification for Finishing Hydrated Lime.

8. C361 – Specification for Reinforced Concrete Low Head Pressure Pipe.

9. C443 – Specification for Joints for Circular Concrete Sewer and Pipe, Using Rubber Gaskets.

10. C478 – Specification for Precast Reinforced Concrete Manhole Sections.

1.04 SUBMITTALS

A. Shop Drawings: Indicating information for fabrication and installation of structures.

B. Manufacturer's Certificate of Compliance for:

1. Gray iron castings.

2. Precast manhole sections

3. Storm sewer pipe.

4. Rip rap.

5. Corrugated steel pipe and endwalls.

1.05 DEFINITIONS

A. Bedding: The soil material adjacent to the pipe which makes contact with the pipe foundation, walls of the trench, and upper level of backfill. The purpose of bedding is to secure the pipe to true line and grade, and to provide structural support to the pipe barrel.

B. Foundation: Soil material beneath the pipe bedding.

1.06 SEQUENCING AND SCHEDULING

A. Do not pursue work causing shut-off of utility service (gas, water, electric, telephone, TV, etc.) to consumers until the utility owner is contacted and all consumers are notified of the shut-off schedule.

B. Strip off and stockpile existing topsoil before commencement of trench excavation.

C. Backfill all trench excavations promptly after pipe is laid.

D. Successfully complete required inspections and tests before commencement of aggregate base course and concrete curb and gutter.

1.07 PROJECT SITE CONDITIONS

A. Storm drainage lines are shown on the Drawings in a general way. Contractor should anticipate minor variations in both horizontal and vertical directions in locating existing system.

1.08 WARRANTY

A. Trench settlements which occur during the warranty period that are greater than 1 inch as measured by a 10 foot straight edge will be repaired by the Contractor in a manner that is acceptable to the Town.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete Materials:

1. Standard Portland Cement Type 1, clean washed sand and crushed rock and gravel free from deleterious materials for monolithic concrete manholes and all manhole bases.

2. Portland Cement: Comply with the requirements of ASTM C150.

3. Design Mix: Subject to the approval of the Town Engineer. Use proper water-cement ratio to obtain (4000 psi) in 28 days.

B. Mortar Materials:

1. Cement: Type 1 Standard Portland Cement conforming to ASTM C150.

2. Lime: Normal finishing hydrated lime meeting the requirements of ASTM C206.

3. Mix Proportions:

a. 1 part cement to 3 parts of suitable plaster sand for mortar used for plastering the exterior walls of block manholes and catch basins, adjusting rings, and lift holes. Use lime or mortar mix in the amount necessary to make a suitable mixture for plastering purposes, but not to exceed 15 percent by volume.

b. 1 part Portland cement to 2 parts of sand to which lime or mortar mix may be added but not to exceed 15 percent by volume for mortar used for laying concrete block.

C. Reinforcing Steel: Comply with the requirements of ASTM A615, Grade 60.

2.02 PIPE MATERIALS

A. Reinforced Concrete (RCP) Pipe and Fittings:

1. General Requirement: ASTM C76, Wall B with circular reinforcing.

2. Materials: Conform to the requirements of ASTM C76, Wall B with circular reinforcing. O-ring gaskets shall be synthetic rubber, circular reinforcing in cross-section, and shall conform to ASTM C361.

3. Pipe Joints: Bell and spigot ASTM C361.

4. Pipe Class: As shown on the Drawings.

5. Marking: Each pipe shall be identified with the name of the manufacturer trade name or trademark and code, identification of plant, date of manufacture, and the pipe class and specification design.

B. Corrugated Steel Pipe and Endwalls

1. Corrugated steel shall conform to the requirements of WisDOT Spec. 521.2.

2.03 STORM MANHOLE AND CATCH BASIN FRAMES AND COVERS

A. Requirement: ASTM A48.

B. Material: Class 35 cast iron. Best grade. Free from injurious defects and flaws.

C. Finish: Coal tar pitch varnish.

D. Finish Preparation: Sandblast.

E. Machine cover and frame contact surface for non-rocking protection.

F. Type and Style: As shown on Drawings.

G. Covers without grate openings shall have 2 concealed pick holes of approved design.

H. Weight: Minimum of 380 lbs.

I. Cast labels "STORM SEWER" on each cover without grate openings as appropriate. Use 2 inch letters.

2.04 STORM MANHOLES AND CATCH BASINS

A. General:

1. Requirements: ASTM C478, details on the Drawings.

2. Diameter and special requirements are shown on the Drawings.

3. Structures shall be of precast concrete.

4. Manhole Joints: Rubber o-ring gasket type meeting ASTM C443.

5. Structure bases shall be pre-cast.

6. Manhole Steps: Reinforced polypropylene plastic steps with No. 2 deformed grade steel rod:

a. All such steps shall be M.A. Industries (SP-1-PF) Manhole Step, or approved equal.

2.05 PIPE BEDDING MATERIAL

A. Pipe bedding shall be the undisturbed native soil. If the native soil is unsuitable, the Contractor shall provide granular bedding as described in WisDOT Spec. 520.3.2.1.

2.06 BACKFILL MATERIAL

A. Suitable materials selected from the excavated materials to the extent available and practical.

B. Suitable materials are mineral soils free of rubbish, trees, stumps, branches, debris, frozen soil, oversize stone, concrete and bituminous chunks, and other similar unsuitable material. If suitable soils are not readily available, the Contractor shall provide granular backfill conforming to WisDOT Spec. 209.2 – Grade 2.

2.07 RIPRAP

A. Riprap shall conform to the requirements of WisDOT Spec. 606.2 for medium riprap.

2.08 GEOTEXTILE FABRIC, TYPE R

A. Conform to the requirements of WisDOT Spec. 645.2.6.

2.09 TRASH GUARDS

A. General:

1. General Requirement: ASTM A153.

2. Materials: Galvanized steel rods meeting the requirements in ASTM A153.

3. Bar size and configuration as shown on the Drawings.

4. Securely attached to end section.

PART 3 - EXECUTION

3.01 PREPARATION

A. See Section 02320 - Excavating, Backfilling, and Compacting for Utilities.

B. By-Pass Pumping: Contractor is responsible for all items required to maintain sewer flows during construction of the new storm sewer. All work and costs for by-pass pumping is considered incidental to the Project, unless otherwise specified.

3.02 INSTALLATION

A. Corrugated Steel Pipe and Endwalls:

1. Conform to the requirements of WisDOT Spec. 521.3, except as modified below:

a. Contact Digger's Hotline (1-800-242-8511) to have utility owners field mark their utility locations and verify exact locations of existing utilities.

b. Excavate to expose existing utilities that cross in close proximity to the planned pipe line to determine the utility's exact location sufficiently ahead of pipe installation to plan for the avoidance of grade conflict. A deviation from the alignment, grade, and location to avoid conflict may be ordered by the Engineer, if in his opinion an alternate alignment, grade, or location is more feasible.

c. Install and maintain barricades, guards, and warning lights as necessary to protect persons from injury and to avoid property damage.

d. Excavate trench to alignment and grade shown on Drawings and staked by the Engineer.

e. Pile all excavated material in a manner that will not endanger or damage trees designated to be saved.

f. Segregate soils in the excavated material that are not suitable for trench backfill and dispose of them off of the Project Site.

g. Dewater the ground as necessary to excavate the trench and install the pipe and structures.

h. Direct all surface and groundwater discharges to natural drainage channels, drains, or storm sewers.

B. Seepage Collar:

1. Install approved seepage collar at all corrugated steel pipe joints.

C. Reinforced Concrete Pipe Installation:

1. Contact Digger's Hotline (1-800-242-8511) to have utility owners field mark their utility locations and verify exact locations of existing utilities.

2. Excavate to expose existing utilities that cross in close proximity to the planned pipe line to determine the utility's exact location sufficiently ahead of pipe installation to plan for the avoidance of grade conflict. A deviation from the alignment, grade, and location to avoid conflict may be ordered by the Engineer, if in his opinion an alternate alignment, grade, or location is more feasible.

3. Install and maintain barricades, guards, and warning lights as necessary to protect persons from injury and to avoid property damage.

4. Lay and maintain pipe appurtenances to the alignment, grade, and location shown on the Drawings and/or staked in the field. No deviation from the Drawing and/or staked alignment, grade, or location is allowed, unless approved by Engineer. Deviation from grade in excess of 0.05 percent may be cause for removal and relaying pipe at the Contractor's expense.

5. General Pipe Installation Procedures:

a. Wipe joints clean; apply the manufacturer's recommended lubricant compound over the entire joint surface; center spigot in bell and push spigot home; take care to prevent dirt from entering the joint space; bring pipe to proper line and grade, and secure pipe in place by properly bedding.

6. Lay pipe upgrade with spigot ends pointing in the direction of flow.

7. All joints must be watertight.

8. Remove all foreign matter or dirt from inside the pipe. Keep the bell and spigot clean during and after installation. Take care to prevent dirt from entering the joint space. Remove any superfluous material from inside the pipe after pipe installation by means of an approved follower or scraper.

9. Where cut-ins make it impossible to construct bell and spigot joints or when dissimilar pipe materials are joined, a reinforced concrete collar shall be placed completely surrounding the joint or the connection shall be made by using an approved adapter.

10. Any pipe which has been disturbed after being laid must be taken up, the joint cleaned and properly relaid as directed by the Engineer.

11. Where a sewer line outlets to grade or where the line is terminated with a flared end section:

    a. Fasten at least the last 3 joints together using 2 "U" bolt fasteners per joint approved and as recommended by the pipe manufacturers.

D. Connect to Existing Structure:

1. Connect to existing structure at location shown on the Drawings.

2. Core the hole in the structure and saw cut the pipe flush with the inside wall of the structure.

3. Bulkhead void between outside wall of pipe and edge of opening with mortar and brick.

4. Reconstruct manhole bench/invert.

E. Connect to End of Existing Pipe:

1. Connect to existing pipe at locations shown on the Drawings.

2. Locate and expose end of existing pipe.

3. Remove existing bulkhead or plug and dispose of off Project Site:

    a. Take care not to damage existing pipe.

b. Any segment of pipe damaged by Contractor shall be replaced with new materials at no expense to the Project.

4. Utilize standard bell and spigot joint with rubber o-ring gasket if possible.

5. If butt connection must be made to existing pipe, construct concrete collar around joint. Collar shall be minimum 12 inches thick in all locations and shall extend a minimum of 12 inches each way of the joint.

F. Structures and Appurtenances Installation:

1. Furnish and install structures in accordance with the Drawings.

2. Excavate to depth and size as shown in the Drawings.

3. Pour inverts shaped to the half section of equivalent size pipe conforming to the inlet and outlet pipe so as to allow for a free, uninterrupted flow with all surfaces sloping to the flow line.

4. Preformed inverts not allowed where pipe grades are 2 percent or greater, unless design grade is built through the manhole.

5. All concrete pipes entering manholes must be cut with a concrete saw.

6. Steps:

a. Locate on the downstream side, except for pipe 24 inches in diameter or greater. Then place where most appropriate to provide the most suitable access.

b. Secure and neatly mortar in place 16 inches on center spacing.

7. Position vertical wall of the eccentric cone on the downstream side.

8. On structures with a build that contains more than 1 barrel section, the section immediately below the precast top slab shall be maximum 16 inch height.

9. Set precast concrete sections plumb with a 1/8 inch per foot maximum out of plumb tolerance allowed. Structures more than 1/8 inch per foot out of plumb shall be re-installed at the Contractor's expense.

10. Lift holes neatly mortared up.

11. Install Adjustment Rings and Adjust Frames and Covers: Conforming to Section 02280 – Adjust Miscellaneous Structures.

G. Construct Manhole Over Existing Pipe:

1. Construct manhole over existing pipe at locations shown on the Drawings.

2. Saw cut existing pipe to fit flush with inside wall of new structure.

3. Seal any openings in manhole.

H. Riprap:

1. Conform to the requirements of WisDOT Spec. 606.3.3 for medium riprap.

I. Geotextile Fabric, Type R:

1. Conform to the requirements of WisDOT Spec. 645.3.6.

3.03 FIELD QUALITY CONTROL

A. Cleaning:

1. Cleaning of storm drainage pipes will be required if the pipes become dirty due to negligence of the Contractor.

2. Complete prior to final inspection for acceptance.

B. Required Tests and Inspections:

1. Lamping:

a. Lamping shall be done by the Town Engineer to verify that the installed pipe is structurally sound, there and are no broken or deflected pipe, and the pipe joints are properly connected.

3.04 PROTECTION

A. Establish erosion control measures per Town standards.

B. Plug all entrances and openings to the system promptly and before suspension of operations at the end of working day.

C. Secure manholes and structures immediately after completion or before suspension of operations at the end of working day with casting or suitable alternative device.

D. Mark structures susceptible to being hit by construction or vehicular traffic.

E. Install or employ temporary erosion control measures or other means around storm sewer inlet structures to prevent entrance of erosion and sediment.

F. Mark plug locations with 4 inch x 4 inch timber to above existing grade.

END OF SECTION

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SECTION 02720

AGGREGATE BASE COURSE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Production and placement of dense graded base course for roadway and driveway base material and roadway shouldering material.

1.02 RELATED SECTIONS

A. Section 02318 – Subgrade Preparation.

B. Section 02630 – Storm Drainage

C. Section 02740 – Hot Mix Asphalt Pavement.

D. Section 02770 – Concrete Curb and Gutter.

E. Section 02775 – Concrete Walks, Medians, and Driveways.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. Section 301 – General Requirements for Base Aggregates.

2. Section 305 – Dense Graded Base.

1.04 SUBMITTALS

A. Submit gradation report on sample of aggregate base to be used.

1.05 DEFINITIONS

A. Subgrade: Subgrade shall be considered the native material found directly below the material being used for the road section as shown on Drawings.

B. Subbase: Subbase shall be considered the granular material placed directly below the aggregate base as shown on Drawings.

.06 SEQUENCING AND SCHEDULING

A. Place aggregate base only after all of the following have been completed to the satisfaction of the Town Engineer:

1. Subgrade has been corrected for instability problems and successfully passed the rolling test.

2. Subgrade has been checked for conformance to line and grade tolerances (string line).

3. Subbase has been checked for conformance to line and grade tolerances (string line).

4. All storm sewer piping/structures have been installed and backfill tested.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Dense Graded Base: Conform to the requirements of WisDOT Section 305.2, 100 Percent Crushed Stone, except as modified below:

1. Use 1 1/4 inch aggregate for all dense graded base course.

2. Use 3/4 inch aggregate for all shouldering.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Confirm Town Engineer's acceptance of the subgrade before placing dense graded base course.

3.02 PREPARATION

A. Prepare the subgrade in accordance with WisDOT Section 301.3.2.

3.03 CONSTRUCTION METHODS

A. Construct the Dense Graded Base Course in accordance with the requirements of WisDOT 305.3, except as modified below:

1. Compact the aggregate base according to WisDOT 301.3.4.3 – Special Compaction, except that each layer shall be compacted to 100 percent of the determined maximum density using a Standard Proctor Test.

3.04 FIELD QUALITY CONTROL

A. The Town Engineer will sample the aggregate base at the Project Site. The rate of sampling is at the discretion of the Engineer. The samples will be submitted to a testing lab to be tested for proof of conformance to material gradation, determination of maximum density and optimum moisture, and other quality requirements.

B. Density and moisture tests will be taken on the compacted aggregate base, at the location and testing rates designated by the Town Engineer. Nuclear density testing shall be considered an approved method.

C. Tolerance: The finished surface of the aggregate base shall not vary more than 0.03 foot above or below the prescribed elevation at any point where measurement is made. Maintain base course until bituminous surface has been installed.

END OF SECTION

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SECTION 02740

HOT MIX ASPHALT PAVEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for bituminous street surfacing.

B. Requirements for bituminous driveway surfacing.

1.02 RELATED SECTIONS

A. Section 02720 - Aggregate Base Course.

1.03 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT). .Conform to the requirements of the following WisDOT Sections, except as modified herein:

1. Section 450 – General Requirements for Asphaltic Pavements.

2. Section 455 – Asphaltic Materials.

3. Section 460 – Hot Mix Asphalt Paving.

4. Section 465 – Asphaltic Surface.

1.04 SUBMITTALS

A. Submit mix design(s) at the preconstruction conference that will be used on the Project. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of paving.

1.05 QUALITY CONTROL

A. Provide and maintain a QC Program conforming to WisDOT Sections 460.2.8 – Quality Management Program, except as modified below:

1. Engineer shall have authority to increase frequency of testing.

1.06 SEQUENCING AND SCHEDULING

A. Obtain approval of Aggregate Base and Concrete Curb and Gutter from the Town Engineer before commencing pavement construction.

B. The Contractor shall provide a 48 hour notice for scheduling and noticing of the residents prior to paving operations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Mixture shall conform to WisDOT Section 460 – Table 460-2, except as modified on typical section Detail Drawings.

B. Aggregate shall conform to the gradation requirements of WisDOT Section 460.2.2, except as modified below:

1. Nominal size of aggregate shall be 3/4 inch (12.5mm) for all pavement mixtures, unless otherwise approved by the Town Engineer.

2. Thickness of lift shall be as shown on the Drawings.

C. Asphaltic Binder in Mixture: Conform to the requirements of WisDOT Section 455.2, except as modified below:

1. Asphaltic binder in mixture shall be PG 58-28, unless otherwise approved by Town Engineer.

D. Bituminous Materials for Tack Coat shall conform to the requirements of WisDOT Section 455.2.5 for type CSS-1 tack coat, or approved equal.

PART 3 - EXECUTION

3.01 PREPARATION

A. Dense Graded Aggregate Base Course: Prepare the Dense Graded Aggregate Base Course as required in Section 02720 - Aggregate Base Course.

B. Hot Mix Asphalt:

1. Apply tack at the rate of 0.05 gallon per square yard.

2. Tack the full surface of in-place street before paving.

3. Tack the edges of concrete curb and gutter.

4. Tack full face of existing bituminous transitions, including patches.

3.02 CONSTRUCTION

A. The Contractor to review the proposed paving sequence with the Engineer prior to placement of each bituminous course (lift).

B. The proposed sequence shall address the longitudinal seams, compaction, traffic control, hauling routes, and placement of pavement markings.

C. Where new construction meets existing bituminous, the existing surface shall have straightly and neatly cut edges to the full depth of pavement as directed by Town Engineer.

D. Preparation of bituminous surface shall include final clean up of the surface with the use of a pickup broom and front end loader.

E. A rubber tire roller shall be used on the bituminous surface course to finish the final paved surface as specified and at the direction of the Town Engineer.

3.03 RESTRICTIONS

A. Existing bituminous surfaces and aggregate bases must be dry prior and during placement of any bituminous pavements.

B. Wearing course shall not be placed when the air temperature in the shade and away from artificial heat is 50 degrees or less, unless otherwise approved by the Town Engineer.

3.04 THICKNESS REQUIREMENTS

A. Conform to Section 460.3.2, except as modified herein:

1. After compaction, the thickness of each course shall be within 1/8 inch of the thickness shown on the Drawings.

2. The Town Engineer may require end of Project core samples for verification of pavement thickness and uniformity.

3.05 PAVEMENT DENSITY

A. Conform to the requirements of WisDOT Section 460.3.3 "Minimum Required Density," except as modified:

1. Measurement of pavement density shall be by nuclear density.

2. Required minimum compaction is 91.5 percent of the target maximum density. Target maximum density shall be determined each day by the Contractor using a Standard Rice Test. Contractor shall provide the target maximum density to the Engineer at the start of paving operations.

B. Driveways and patching shall conform to Section 450.3.2.6.2 – Ordinary Compaction.

END OF SECTION

SECTION 02760

BITUMINOUS JOINT CONSTRUCTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Joint construction for bituminous pavements by a method of saw and seal.

1.02 RELATED SECTIONS

A. Section 02740 – Hot Mix Asphalt Pavement.

1.03 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," – current edition including all current supplements (WisDOT).

1.04 SUBMITTALS

A. Submit the Following Items:

1. Product and data sheet for joint sealant material.

2. Manufacturer's recommendations pertaining to heating and application of joint sealant.

1.05 DEFINITIONS

A. Saw and Seal: Saw cutting and sealing transverse joints in new bituminous pavements.

1.06 SEQUENCING AND SCHEDULING

A. Saw and seal of joints shall be completed no sooner than 48 hours following the wear course placement.

PART 2 – PRODUCTS

2.01 JOINT SEALANT MATERIALS

A. Conform to WisDOT Spec., except as modified herein:

1. Saw and Seal:

a. Flexible at –30 degrees F. (capable of being bent over without cracking).

b. Proven successful in the field in Wisconsin during the last 2 years.

2. Packaged In Sealed Containers Marked With: Name of manufacturer, trade name of sealant, manufacturer's batch and lot number, pouring temperature, and safe heating temperature.

3. Bond Breaker Tape for Saw and Seal:

a. Regular masking tape or a suitable bond breaker tape designed for use with hot pour sealants.

b. Width: Equal to but not more than 1/8 inch narrower than the width of the saw cut.

PART 3 - EXECUTION

3.01 GENERAL

A. Perform bituminous joint construction operations during daylight hours.

B. Establish traffic control which is compatible to the operations being performed.

3.02 PREPARATION

A. Weather Limitations:

1. The existing bituminous surface must be dry prior to performing the joint construction work.

2. Air temperature in the shade and away from artificial heat sources is at least 40° F.

3.03 SAWCUTTING OF JOINTS

A. Saw and seal joints shall be cut using blades of such size and configuration such that the resulting joint reservoir shape conforms to Detail Plate RD-7 details on the Drawings:

1. A single saw cut shall be made if the configuration consists of multiple reservoir shape.

2. Extend the full width of the pavement.

3. Dry or wet cutting is allowed.

B. Joint Reservoir Size:

1. Saw and Seal: 1/2 inch wide, 5/8 inch depth.

C. Saw and Seal joints shall have a longitudinal spacing of 40 feet, or as directed by Town Engineer.

3.04 CLEANING JOINTS

A. Dry Sawed Joints:

1. Clean thoroughly with a 100 psi air blast to remove any dust, dirt, or deleterious matter adhering to the joint walls or in the joint cavity.

2. Blow or brush the dry dust and material off the pavement surface.

B. Wet Sawed Joints:

1. Clean thoroughly with a 50 psi water blast immediately after sawing to remove any slurry dirt or deleterious matter adhering to the joint walls or in the joint cavity.

2. Dry with a 100 psi air blast.

3. Re-clean joint with a water blast if the air blast produces dirt or other residue from the joint cavity.

4. Immediately flush all sawing slurry from the pavement surface.

3.05 HEATING JOINTS

A. Dry and warm joints with a hot compressed air heat lance immediately prior to placing the sealant:

1. Temperature of Air at Exiting Orifice: At least 2,800° F.

2. Velocity of Exiting Heated Air: At least 2,800 fps.

3.06 SEALING

A. Heat sealant material in a kettle or melter constructed as a double boiler with the space between the inner and outer shells filled with oil or other heat transfer medium.

B. Heat or insulate applicator wand to maintain the pouring temperature of the sealant during the placement operations.

C. Do not use pour pots or similar devices to fill sawed joints.

D. Adhere to Manufacturer's Recommendations:

1. Do not let field application equipment exceed the safe heating temperature recommended by manufacturer.

E. Do not heat sealant material at pouring temperature for more than 6 hours.

F. Do not re-heat sealant material.

G. Saw and Seal:

1. Place bond breaker tape in the bottom of the saw cut joint after cleaning and just prior to sealing.

2. After cooling, the level of the sealer will not be greater than 1/8 inch below the pavement or shoulder surface.

3. Do not over fill joints.

4. Do not spread sand on sealed joints to allow for opening to traffic.

5. Sealant must be tack free prior to opening to traffic.

3.07 FIELD QUALITY CONTROL

A. Final results of cleaning joint subject to Town Engineer's approval.

B. Application time of sealing is subject to Town Engineer's approval.

C. Do not place sealant if Town Engineer determines the weather and roadbed conditions to be unfavorable.

D. Final appearance of sealed joint will present a neat, fine line.

END OF SECTION

SECTION 02764

BITUMINOUS CRACK REPAIR – FLEXIBLE PATCHING

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. The rehabilitation of sunken or cupped longitudinal and traverse cracks in existing bituminous pavements.

B. RELATED SECTIONS

1. Section 01550 – Traffic Control.

2. Section 02765 – Bituminous Crack Repair Treatments.

3. Section 02785 – Bituminous Pavement Treatments.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Current Edition (WisDOT Spec.) including but not limited to:

1. Section 455 – Asphaltic Materials.

2. Section 475 – Seal Coat.

1.03 DEFINITIONS

A. Flexible Patching – A sealant formulated with selected polymer-modified asphalts and fibers is utilized to level, strengthen and seal sunken or cupped pavement cracks, alligator areas and minor spalling.

1.04 SEQUENCE AND SCHEDULING

A. Specific locations of the crack repair work shall be identified by the Engineer prior to the Contractor performing the specified Work.

B. Flexible patching shall be performed prior to slurry crack sealing and placement of the bituminous overlay surfacing.

1.05 PROJECT CONDITIONS

A. The Owner has the right to increase or decrease the lineal feet quantity of flexible patching treatment. The Contractor's Bid Unit Price shall apply independent of any quantity change.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Sealant:

1. Bituminous Material: Conform to WisDOT Spec. 455, or as modified herein:

a. Flexible Surface Patching Sealant shall conform to the following:

Typical Property	Specification
Recommended pour temperature	370 degrees F
Maximum heating temperature	390 degrees F
Recommended extended heating time	6 hours
Penetration (150gr/5 sec)	70 to 110
Resiliency	40 percent min
Flow at 140 degrees F	3 mm max
Specific gravity	1.13
Asphalt compatibility	Compatible

2. Fibers: High modulus, low shrinkage; suitable for use in industrial hot melt applications.

B. Aggregate:

1. Conform to WisDOT Spec. 475.2, or as modified herein:

a. The aggregate shall be a crushed stone, excluding mineral filler; shall have the following gradation:

Sieve Size	Percent Passing
3/8 Inch	100
No. 4	85 to 100
No. 8	40 to 95
No. 30	20 to 60
No. 50	14 to 35
No. 100	10 to 25
No. 200	5 to 25

2. Washed and dried.

PART 3 – EXECUTION

3.01 GENERAL

A. The completed joint repair treatment shall have a homogenous appearance and a uniform texture.

B. Material shall only be placed when the air and surface temperature in the shade is at least 50 degrees F and rising. During falling temperatures, operations shall be suspended before the above conditions are no longer met and until they are met again.

C. Material shall not be placed in wet conditions. Any material that becomes wet/contaminated prior to proper curing shall be removed and replaced by the Contractor at the Contractor's expense.

D. Placement of material shall not occur after October 1, 2015.

E. Establish traffic control which is compatible to the operations being performed.

F. The Contractor shall be responsible for removing all debris resulting from the Work.

3.02 RESTRICTIONS

A. Flexible patching operations shall be conducted only between 7 A.M. and 7 P.M.

B. Application of bituminous material to concrete curb surfaces and into storm sewers is prohibited. The Contractor will be responsible for the immediate removal of said material.

3.03 SURFACE PREPARATION

A. Clean thoroughly with a 100-psi air blast to remove any dirt or loose material from the crack void.

B. Blow or brush the excess material off the adjacent pavement surface.

3.04 APPLICATION

A. The application shall be in accordance to the manufacture's requirements for the specific equipment being used.

B. The final level shall be flush with the pavement surface, no more than 0.125 inch thick. Excessive pools shall be spread out evenly (squeegeed) or removed from the surface.

C. The placed sealant shall be immediately covered with the aggregate material in a manner to minimize the displacement of the sealant. Excessive debris shall be removed.

D. The Contractor shall protect the completed Work for the full amount of time required for curing of the materials placed as well as during cleaning operations. Any damaged areas shall be repaired at the Contractor's expense.

3.05 PROTECTION

A. Conform to WisDOT Spec. 475.3.6, except as modified herein:

1. The Contractor shall be responsible for damage done to any adjacent driving surfaces, shoulders, or boulevards.

3.06 FIELD QUALITY CONTROL

A. Final results of joint cleaning subject to Engineer's approval.

B. Application time of sealing is subject to the Engineer's approval.

C. Do not place sealants if the Engineer determines the weather or surface conditions to be unfavorable.

D. Prior to performing the Work, the Contractor shall provide documentation to the Owner showing a minimum 1-year experience in performing the flexible surface patch application.

END OF SECTION

SECTION 02765

BITUMINOUS CRACK REPAIR TREATMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. The rehabilitation of longitudinal and traverse cracks in existing bituminous pavements using the crack route and seal and seal existing crack methods.

B. Related Sections

1. Section 01550 – Traffic Control.

2. Section 02764 – Bituminous Crack Repair – Flexible Patching.

3. Section 02785 – Bituminous Pavement Treatments.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Current Edition (WisDOT Spec.) including but not limited to:

1. Section 455 – Asphaltic Materials.

2. Section 475 – Seal Coat.

1.03 DEFINITIONS

A. Crack Route and Seal – Saw cutting and sealing of existing random joints of an existing bituminous pavement.

B. Seal Existing Crack – Placing sealant material over existing cracks that have previously been routed and sealed but the sealant has since failed.

1.04 SEQUENCE AND SCHEDULING

A. Specific locations of the crack repair work shall be identified by the Engineer prior to the Contractor performing the specified Work.

B. Crack route and seal and sealing existing cracks shall be performed following patching and prior to placement of seal coat or bituminous overlay surfacing.

1.05 PROJECT CONDITIONS

A. The Owner reserves the right to increase or decrease the quantity of crack seal treatment, as well as substitute different roads for the roads proposed in the Drawings. The Contractor's Bid Unit Price shall apply independent of any quantity change.

PART 2 PRODUCTS

2.01 MATERIALS

A. Crack Route and Seal and Seal Existing Cracks: Joint sealant shall conform to ASTM D 6690 Type II, except as modified herein:

1. Cone Penetration at 25°C (77 °F), 150 g, 5 s 60-90
2. Bond at -29 °C (-20 °F), 3 cycles, 100% extension .....Passes
3. Mandrel bend test at -34 °C (-29 °F), 25mm (1 inch) mandrel No cracking
4. Resilience at 25 °C (77 °F), minimum, %.....40

B. Crack Route and Seal and Seal Existing Cracks: Protective paper covering shall consist of 1-ply toilet paper.

PART 3 EXECUTION

3.01 GENERAL

A. The completed joint repair treatment shall have a homogenous appearance and a uniform texture.

B. Material shall not be placed in wet conditions. Any material that becomes wet/contaminated prior to proper curing shall be removed at replaced by the Contractor at the Contractor's expense.

C. Establish traffic control which is compatible to the operations being performed.

D. The Contractor shall be responsible for removing all debris resulting from the Work.

3.02 RESTRICTIONS

A. Crack sealing operations shall be conducted only between 7 A.M. and 7 P.M.

B. Application of bituminous material to concrete curb surfaces and into storm sewers is prohibited. The Contractor will be responsible for the immediate removal of said material.

3.03 SAWCUTTING OF JOINTS

A. Dry or wet cutting is allowed.

B. Joint Reservoir Size:

1. Crack Route and Seal: 3/4 inch wide, 3/4 inch depth.

C. Crack route and seal joints shall include all existing random joints, longitudinal or transverse with a width less than 3/4 of an inch.

3.04 SURFACE PREPARATION

A. Dry Sawed Joints:

1. Clean thoroughly with a 100-psi air blast to remove any dust, dirt, or deleterious matter adhering to the joint walls or in the joint cavity.

2. Blow or brush the dry dust and material off the pavement surface.

B. Wet Sawed Joints:

1. Clean thoroughly with a 50-psi water blast immediately after sawing to remove any slurry dirt or deleterious matter adhering to the joint walls or in the joint cavity.

2. Dry with a 100-psi air blast.

3. Re-clean joint with a water blast if the air blast produces dirt or other residue from the joint cavity.

4. Immediately flush all sawing slurry from the pavement surface.

C. Apply an emulsified bituminous tack to the existing surface prior to placement of slurry seal crack surface treatment.

3.05 APPLICATION

A. The application rates shall be in accordance to the manufactures requirements for the specific equipment being used.

B. The rates shall be reviewed by the Engineer prior to application.

C. The Contractor shall protect the completed Work for the full amount of time required for curing of the materials placed as well as during cleaning operations.

3.06 HEATING JOINTS

A. Dry and warm joints with a hot compressed air heat lance immediately prior to placing the sealant.

1. Temperature of Air at Exiting Orifice: At least 2,800 degrees F.

2. Velocity of Exiting Heated Air: At least 2,800 fps

3.07 SEALING

A. Heat sealant material in a kettle or melter constructed as a double boiler with the space between the inner and outer shells filled with oil or other heat transfer medium.

B. Heat or insulate applicator wand to maintain the pouring temperature of the sealant during the placement operations.

C. Do not use pour pots or similar devices to fill sawed joints.

D. Adhere to Manufacturer's Recommendations.

1. Do not let field application equipment exceed the safe heating temperature recommended by manufacturer.

E. Do not re-heat sealant material.

F. Crack Route and Seal and Seal Existing Cracks.

1. The sealed joint shall have a 4-inch over band of sealant material.

2. The sealed joint shall be protected with a 1-ply toilet paper.

3.08 PROTECTION

A. Conform to WisDOT Spec. 475.3.6, except as modified herein:

1. The Contactor shall be responsible for damage done to any adjacent driving surfaces, shoulders, or boulevards.

3.09 FIELD QUALITY CONTROL

A. Final results of cleaning joint subject to Engineer's approval.

B. Application time of sealing is subject to the Engineer's approval.

C. Do not place sealants if the Engineer determines the weather or surface conditions to be unfavorable.

D. Prior to performing the Work, the Contractor shall provide documentation to the Owner showing a minimum 1-year experience in performing the slurry seal application.

END OF SECTION

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SECTION 02766

PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Permanent pavement markings.

1.02 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. Section 646 – Pavement Markings.

B. State of Wisconsin Department of Transportation Facilities Development Manual Standard Detail Drawings 15C7 and 15C8.

C. The Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) – current edition.

D. The Wisconsin Manual on Uniform Traffic Control Devices (MUTCD) - current edition.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Upon delivery to the Project Site, the Contractor shall store the materials at least 10 feet away from any construction areas or traveled roadways. Vehicles and equipment shall not be stored, even temporarily, in the buffer zone of the work area or where it would be so close to moving traffic that it is in the judgment of the Engineer a potential hazard to motorists.

1.04 MAINTENANCE

A. The Contractor shall maintain pavement markings in accordance with the Contract, the Traffic Control Plan, the FHWA MUTCD, the Wisconsin MUTCD, or as directed by the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All permanent pavement markings shall be epoxy and conform to the applicable requirements of WisDOT Spec. 646.2.4.

B. Glass Beads shall conform to the requirements of WisDOT Spec 646.2.3.

2.02 EQUIPMENT

A. All pavement marking equipment shall conform to the applicable requirements of WisDOT Spec. 646.3.2.

PART 3 – EXECUTION

3.01 GENERAL

A. The Engineer shall be notified at least 48 hours prior to the Contractor applying any pavement markings so all staking and preliminary marking may be accomplished.

B. The pavement marking crew shall include at least 1 technical expert knowledgeable in each of the following areas:

1. Equipment operation.

2. Application techniques.

3. Traffic control.

4. Safety regulations.

C. The filling of tanks, pouring of materials, or cleaning of equipment shall not be performed on unprotected pavement surfaces, unless adequate provisions are made to prevent spillage of material.

D. All permanent pavement marking work shall conform to WisDOT Spec. 646.3.

3.02 SCHEDULE

A. Painting of Pavement Markings:

1. Place permanent pavement markings following completion of bituminous wear course:

a. No sooner than 24 hours after placement of bituminous.

b. Within 5 working days of completion of bituminous placement.

3.03 PREPARATION

A. Locations:

1. Apply as shown on the Drawings, or as directed by the Engineer.

B. Bituminous Surface:

1. Engineer may direct cleaning of surface as necessary immediately prior to marking application:

a. The Contractor shall clean the roadway surface in accordance with WisDOT Spec. 646.3.3.2 prior to the placement of all pavement markings.

3.04 APPLICATION

A. General:

1. Tolerance:

a. Width: A tolerance of 1/4 inch under or 1/4 inch over the specified width will be allowed for striping provided the variation is gradual and does not detract from the general appearance. Striping found to be outside of the acceptable tolerance limits shall be re-striped at no cost to the Town.

2. Conditions:

a. Markings shall not be applied when wind or other conditions cause a film of dust to be deposited on the pavement surface after cleaning and before the marking material can be applied.

b. Pavement markings shall only be applied in seasonable weather when air temperature is 50 degrees F or higher.

END OF SECTION

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SECTION 02770

CONCRETE CURB AND GUTTER

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Construction of concrete curbs, and curb and gutter.

1.02 RELATED SECTIONS

A. Section 02630 – Storm Drainage.

B. Section 02720 –Aggregate Base Course.

C. Section 02740 – Hot Mix Asphalt Pavement.

D. Section 02775 – Concrete Walks, Medians, and Driveways.

1.03 REFERENCES

A. American Society of Testing Materials (ASTM):

1. ASTM C260 – Air-Entraining Admixtures for Concrete.

B. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. 501 – Concrete.

2. 601 – Concrete Curb and Gutter.

1.04 SUBMITTALS

A. Submit one (1) 7 day and two (2) 28 day concrete cylinder test results for all concrete pours in any given day.

B. Submit WisDOT approved design mix for concrete that will be used on the Project at the preconstruction conference. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of curb and gutter installation.

1.05 SEQUENCING AND SCHEDULING

A. Install concrete curb and gutter within 1 week after aggregate base has been completed and approved. Minimum cure time of 72 hours is required prior to backfilling curb and gutter.

B. Concrete curb and gutter construction precedes installation of pavement.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete: Conform to WisDOT Spec. 501: Concrete, except as modified below:

1. Portland Cement:

a. Conform to WisDOT 501.2.

b. Concrete shall be air-entrained.

2. Air-Entraining Admixtures:

a. Conform to WisDOT 501.2.

b. Not to be added to the concrete mixtures in the field without approval from Town Engineer.

3. Mix Designation and Classification for Concrete Curb and Gutter:

a. Manual Placement: Grade A.

b. Slip Form Placement: Grade A2 or A-S2.

c. 28-day compressive strength requirement: 4,000 psi.

B. High Early Strength Concrete: Conform to WisDOT 501.2, except as modified:

1. High early strength concrete shall be designed to provide a maximum water/cementitious ratio of 0.40.

2. High early strength concrete shall be designed to provide a minimum flexural strength of 500 psi and a minimum compressive strength of 3,000 psi in 48 hours.

C. Pre-Formed Joint Filler: Conform to WisDOT Spec. 415.2.3.

D. Curing Compound: Conform to WisDOT Spec. 415.2.4.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide copies of batch tickets for concrete mix at the time of material delivery to Project Site.

B. The concrete curb and gutter shall be constructed at the locations and elevations indicated on the Drawings and in accordance with Detail Plate RD-13.

C. The style or type of curb and gutter shall conform to shape and size as shown on the Drawings.

D. Construct intersection curb radii and transitions sections to conform to the detail on the Drawings.

E. Construct 10 foot transition sections at inlet structures to conform to the detail on the Drawings.

F. Concrete curb ramp depressions shall be constructed to conform to the detail on the Drawings.

G. Construct curb transitions for driveways per the detail on the Drawings. Locations to be verified by Engineer at the time of construction.

H. The completed concrete work shall give the appearance of uniformity in surface contour and texture, and shall be accurately constructed to line and grade. The required joints, edges, and flow lines shall show neat workmanship.

I. Retempering of the concrete which has partially hardened with or without additional materials or water is prohibited.

J. Full curb and gutter panels shall be removed and replaced for all major cracks, breaks, or chips $\geq$ 1/2 inch.

K. All handwork to streets, sidewalks, driveways, and curb and gutter, including around catch basins, shall be mechanically vibrated with absolutely no voids or honey-combing allowed.

3.02 FOUNDATION PREPARATIONS

A. Support on a compacted aggregate base extending 1 foot behind the back of curb conforming to Section 02720 – Aggregate Base Course (100 Percent Maximum Density).

3.03 FORMS

A. Conform to WisDOT Spec. 601.3.3.

3.04 JOINT CONSTRUCTION

A. Conform to WisDOT Spec. 601.3.6, except as modified herein:

1. Maximum spacing of expansion joints for slip formed shall be 200 feet.

2. Control joints 10 foot intervals.

3. All expansion joints and control joints shall be uniform and cleaned 1/4 inch to 3/8 inch in depth.

4. All expansion and control joints shall be tooled along entire top and front face of curb and gutter.

5. All control joints shall be knifed through entire depth.

6. All expansion joints shall be vertical, tooled, clean and flush with felt, no voids accepted.

3.05 METAL REINFORCEMENT

A. Conform to WisDOT Spec. 505, except as modified herein:

1. When required, install two (2) #4 steel reinforcing rods in lower portion of the curb section, with a minimum 2 inches coverage on all sides:

a. Placement shall extend 10 feet on each side of a catch basin.

3.06 CONCRETE SIDEWALK AND PEDESTRIAN RAMPS

A. Pedestrian ramp curb openings adjacent to bituminous pathways and concrete walkways shall match the width of the pathway with 5 foot curb tapers, as shown on Detail Plate No. RD-19.

3.07 PLACING AND FINISHING

A. Conform to WisDOT Spec. 601.3.4 and 601.3.5, except as modified herein:

1. The top surface of the curb and gutter shall have a brush finish at right angles to the curb line.

3.08 CONCRETE CURING AND PROTECTION`

A. Conform to WisDOT Section 415.3.12 and 415.3.16, except as modified herein:

1. All surfaces shall be coated with membrane curing compound immediately after finishing at the specified rate.

2. The membrane curing compound must contain a fugitive dye and be applied in 2 different directions perpendicular to each other to provide a uniform solid white opaque coverage (equal to a white sheet of typing paper) on all exposed concrete surfaces.

3. A second application of membrane curing compound shall be applied 4 to 8 hours after the first application at the specified rate.

4. The freshly finished surface shall be protected, surfaces pitted by rain will be considered unacceptable.

5. Removal and replacement of any curb section damaged by traffic, rain, cold weather, or other causes occurring prior to final acceptance shall the responsibility of the Contractor.

B. Mixing and Protection During Cold Weather: Comply with WisDOT Section 415.3.15 - Cold Weather Concreting, except as modified herein:

1. A curing material that has water resistance, strength, and insulation properties will be required.

2. If temperatures are projected to fall below 32 degrees Fahrenheit within 24 hours of concrete placement, insulated blankets shall be used for curing.

a. All costs associated with insulated blanket curing shall be incurred by the Contractor.

3.09 BACKFILLING

A. Initial Backfilling:

1. Follow the 72 hour curing period with completion within 6 days of original placement.

2. Tolerance within 0.3 feet to the top of curb elevation.

B. Final Grading:

1. Following completion of private utility work by others.

C. Curb damaged during backfilling is the responsibility of the Contractor.

3.10 WORKMANSHIP

A. Conform to WisDOT Spec. 601.3, except as modified herein:

1. Any deviation in the design curvature of concrete edges in excess of 3/8 of an inch, measured with a 10 foot straight edge, will be considered unacceptable.

2. Acceptance of work by price reduction will not be allowed.

3.11 FIELD QUALITY CONTROL

A. Any curb damaged by the Contractor shall be removed and replaced by the Contractor, and will be incidental to the Project.

B. The Owner shall have an independent testing laboratory perform the following minimum tests. The test locations shall be determined by the Engineer:

1. 1 air entrainment test per day, per Project.

2. 1 slump test per day, per Project.

3. 1 set of cylinders for compression test per day, per Project.

END OF SECTION

SECTION 02775

CONCRETE WALKS, MEDIANS, AND DRIVEWAYS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete walkways, medians, driveways, and valley gutters.

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

B. Section 02720 – Aggregate Base Course.

C. Section 02740 – Hot Mix Asphalt Pavement.

D. Section 02770 – Concrete Curb and Gutter.

1.03 REFERENCES

A. American Society of Testing Materials (ASTM):

1. C260 - Air-Entraining Admixtures for Concrete.

B. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - current edition including all current supplements (WisDOT):

1. 501 – Concrete.

2. 602 – Concrete Sidewalks, Loading Zones, Safety Islands and Steps.

1.04 SUBMITTALS

A. Submit one (1) 7 day and two (2) 28 day concrete test results for all concrete pours in any given day.

B. Submit WisDOT approved design mix for concrete that will be used on the Project at the preconstruction conference. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of concrete walk, median, or driveway installation.

1.05 SEQUENCING AND SCHEDULING

A. Construction of pedestrian curb ramps and sidewalk shall be completed in the same year as the curb and gutter.

B. Construction of pedestrian curb ramps shall be completed following the placement of the bituminous walk or pathway.

C. Construction of the concrete driveway apron shall begin no sooner than 24 hours after placement of the adjacent concrete curb and gutter with completion within 5 days of curb placement.

D. Construct concrete medians no sooner than 72 hours after placement of the concrete curb and/or walks.

E. Construct concrete valley gutter prior to the placement of the bituminous base.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete: Conform to WisDOT Spec. 501: Concrete, except as modified below:

1. Portland Cement:

a. Conform to WisDOT 501.2.

b. Concrete shall be air-entrained.

2. Air-Entraining Admixtures:

a. Conform to WisDOT 501.2.

b. Not to be added to the concrete mixtures in the field without approval from Town Engineer.

3. Mix Designation and Classification for Concrete Curb and Gutter:

a. Manual Placement: Grade A.

b. Slip Form Placement: Grade A2.

c. 28-day compressive strength requirement: 4,000 psi.

B. High Early Strength Concrete: Conform to WisDOT 501.2, except as modified:

1. High early strength concrete shall be designed to provide a maximum

water/cementitious ratio of 0.40.

2. High early strength concrete shall be designed to provide a minimum flexural strength of 500 psi and a minimum compressive strength of 3,000 psi in 48 hours.

C. Pre-Formed Joint Filler: Conform to WisDOT Spec. 415.2.3.

D. Curing Compound: Conform to WisDOT Spec. 415.2.4.

E. Sub-Grade Base Material:

1. Aggregate base material shall be required below all concrete walks, unless granular sub-base material is found suitable by Town Engineer:

a. Aggregated Base Material: Conform to Section 02720 - Aggregate Base Course.

b. Granular Sub-base Material: Conform to WisDOT Spec. 350 -Sub-Base.

F. Truncated Dome Panels: Use approved products and colors listed below, or approved equal:

1. East Jordan Iron Works Cast Iron Detectable Warning Plates:

a. Color: Natural Finish

2. Neenah Cast Iron Detectable Warning Plate:

a. Color: Natural Finish.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide copies of batch tickets for concrete mix at the time of material delivery to Project Site.

B. Construct concrete walkways, curb ramps, medians, driveways, and valley gutters at the locations and elevations indicated on the Drawings.

C. Verify locations with Engineer in the field prior to construction.

D. The completed concrete work shall give the appearance of uniformity in surface contour and texture, and shall be accurately constructed to line and grade. The required joints, edges, and flow lines shall show neat workmanship.

E. Retempering of concrete which has partially hardened with or without additional materials or water is prohibited.

3.02 FOUNDATION PREPARATIONS

A. Placement and compaction of the aggregate base or granular material to support the concrete work shall conform to Section 02720 - Aggregate Base Course or Section 02318 – Subgrade Preparation.

B. The foundation shall be approved by the Engineer prior to placement of concrete material.

3.03 FORMS

A. Conform to WisDOT Spec. 602.3.2.2.

3.04 JOINT CONSTRUCTION

A. Conform to WisDOT Spec. 602.3.2.5, except as modified herein:

1. Maximum spacing of expansion joints for walkways shall be 60 feet.

2. Match joints of adjacent concrete work.

3.05 METAL REINFORCEMENT

A. Conform to WisDOT Spec. 602.3.2.4, except as modified herein:

1. Install three (3) #4 steel reinforcing rods in lower portion of the valley gutter section with minimum 2 inch coverage on all sides as shown in details on the Drawings.

2. Install two (2) #4 steel reinforcing rods in lower portion of the concrete gutter at commercial driveway entrances with 2 inch coverage on all sides as shown in details on the Drawings.

3.06 PLACING AND FINISHING

A. Conform to WisDOT Spec. 602.3.2.3, except as modified herein:

1. Any deviation in the design curvature of concrete edges in excess of 3/8 of an inch, measured with a 10 foot straight edge, will be considered unacceptable.

2. Any surface area allowing the entrapment of water at a depth 1/8 inch or greater will be considered unacceptable.

3. Unacceptable work shall be removed and replaced with acceptable work as directed by the Engineer. Acceptance of work by price reduction will not be allowed.

B. Pedestrian Curb Ramp - Truncated Dome:

1. Truncated Dome Panels - Conform to the manufacturer's recommendations for placement.

2. Truncated Dome Panels shall be placed (wet set) on a minimum of 6 inches concrete and prior to finishing the adjacent concrete surface of the pedestrian ramp. The joint between the panel and concrete shall be finished with 1/2 inch radius edging tool.

3. Conform to WisDOT Standard Detail Drawing 8D5 for specified Truncated Dome surface pattern dimensions. Refer to the Drawings for actual ramp size, shape, and slopes.

4. Multiple Truncated Dome panels shall be of equal size and shall be joined together per the manufacturer's recommendation.

5. Joint space between Truncated Dome panels shall be no greater than 1/4 of an inch in width.

3.07 CONCRETE CURING AND PROTECTION

A. Conform to WisDOT Section 415.3.12 and 415.3.16, except as modified herein:

1. All surfaces shall be coated with membrane curing compound immediately after finishing at the specified rate.

2. The membrane curing compound must contain a fugitive dye and be applied in 2 different directions perpendicular to each other to provide a uniform solid white opaque coverage (equal to a white sheet of typing paper) on all exposed concrete surfaces.

3. A second application of membrane curing compound shall be applied 4 to 8 hours after the first application at the specified rate.

4. The freshly finished surface shall be protected, surfaces pitted by rain will be considered unacceptable.

5. Removal and replacement of any curb section damaged by traffic, rain, cold weather, or other causes occurring prior to final acceptance shall the responsibility of the Contractor.

B. Mixing and Protection During Cold Weather: Comply with WisDOT Section 415.3.15 - Cold Weather Concreting, except as modified herein:

1. A curing material that has water resistance, strength, and insulation properties will be required.

2. If temperatures are projected to fall below 32 degrees Fahrenheit within 24 hours of concrete placement, insulated blankets shall be used for curing.

a. All costs associated with insulated blanket curing shall be incurred by the Contractor.

3.08 BACKFILLING

A. Conform to WisDOT Spec. 602.3.2.7, except as modified herein:

1. Perform backfilling to protect the concrete no sooner than 72 hours after placement of the concrete.

3.09 FIELD QUALITY CONTROL

A. Any curb damaged by the Contractor shall be removed and replaced by the Contractor, and will be incidental to the Project.

B. The Owner shall have an independent testing laboratory perform the following minimum tests. The test locations shall be determined by the Engineer:

1. 1 air entrainment test per day, per Project.

2. 1 slump test per day, per Project.

3. 1 set of cylinders for compression test per day, per Project.

END OF SECTION

SECTION 02785

BITUMINOUS PAVEMENT TREATMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. Application of bituminous material followed by placement of an aggregated material on an existing bituminous pavement.

B. RELATED SECTIONS

1. Section 01550 – Traffic Control.

2. Section 02764 – Bituminous Crack Repair – Flexible Patching.

3. Section 02765 - Bituminous Crack Repair Treatments.

1.03 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Current Edition (WisDot Spec.) including but not limited to:

1. Section 450 – General Requirements for Asphaltic Pavements.

2. Section 455 – Asphaltic Materials.

3. Section 460 – Hot Mix Asphalt Pavement.

4. Section 475 - Seal Coat.

B. Wisconsin Administrative Code:

1. Natural Resources 538.08 – Industrial Byproduct Categories.

C. American Association of State Highway and Transportation Officials (AASHTO):

1. T 96 – Standard Methods of Testing for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

2. T 104 – Standard Methods of Testing for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

D. American Society of Testing and Materials (ASTM):

1. D5624-95 – Standard Method for Determining the Transverse Spread Rate for Surface Treatment Application.

1.04 SEQUENCING AND SCHEDULING

A. Aggregate must be delivered and stockpiled 14 days prior to the start of construction to allow the Owner time to perform the necessary testing.

B. Aggregate stockpiling shall be as indicated on the Drawings or as directed by the Engineer.

C. Prior to starting Work, the Contractor shall meet the Engineer and Owner to discuss the method and means of material placement, means of material supply, a work schedule, and a general review of the Specifications.

D. Crack route and sealing and patching must be completed prior to starting the Work of this Section.

E. The Contractor is responsible for notification to the residents restricting parking and use during the seal coat operation.

1.05 PROJECT CONDITIONS

A. The Owner reserves the right to increase or decrease the quantity of seal coat treatment, as well as substitute different roads for the roads proposed in the Drawings. The Contractor's Bid Unit Price shall apply independent of any quantity change.

B. Seal Coat application must be done for the full width of the road in one pass (up to 24' wide) in order to eliminate overlapping of the seal coat at road centerline.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Bituminous Material:

1. Conform to WisDOT Spec. 455, Asphaltic Materials.

a. Cationic CRS-2 to be used

B. Seal Coat Aggregate:

1. Conform to WisDOT Spec. 475, and the following:

a. Dresser Trap Rock FA 2 Aggregate Gradation.

PART 3 – EXECUTION

3.01 GENERAL

A. Prospective Bidders are advised to inspect all streets and verify existing conditions to their own satisfaction prior to submitting a Bid.

B. Material shall not be placed in wet conditions. Any material that becomes wet/contaminated prior to the proper curing shall be removed and replaced by the Contractor at the Contractor's expense.

C. Establish traffic control which is compatible to the operations being performed.

D. The Contractor shall be responsible for removing all debris resulting from the Work.

3.02 RESTRICTIONS

A. Seal coating operations shall be conducted only between 7 A.M. and 7 P.M.

B. Seal coating operations shall not commence until the relative humidity is less than 70% and air temperature is above 70 °F.

C. Assign at least 1 laborer strictly to walk behind the chip spreader operation to hand broom or clean up any missed area or piles of aggregate.

3.03 EQUIPMENT

A. Conform to WisDOT Spec. 475.3.2 except as modified herein:

1. Aggregate spreader shall be a self-propelled and computerized.

2. The sweeping broom shall be a power pick up broom.

3.04 SURFACE PREPARATIONS

A. All road surfaces carefully cleaned, scraped, swept, and approved by the Engineer prior to seal coating.

B. Application of water may be required to minimize the creation of air borne dust and assist in the sweeping and cleaning operation.

C. Hand cleanup used as necessary.

3.05 BITUMINOUS MATERIAL APPLICATION

A. Conform to WisDOT Spec. 475.3.4, except as modified herein:

1. Application rates shall be **0.28** gal per square yard and modified only as directed by the Engineer or an authorized representative.

2. Application rates will be adjusted based on existing surface conditions and traffic volumes.

3.06 AGGREGATE APPLICATION

A. Conform to WisDOT Spec. 475.3.5, except as modified herein:

1. Application rates shall be **24** pounds per square yard and modified only as directed by the Engineer or an authorized representative.

2. The Contractor is responsible to perform the test strip and calibration of the chip spreader in accordance to the "Standard Method for Determining the Transverse Spread Rate for Surface Treatment Application" (Modified Method ASTM D5624-95):

   a. Complete this procedure on the first day of seal coat application and 1 additional time during construction as requested by the Engineer.

   b. All cost associated with this test are considered incidental to the Aggregate Placement Bid Item.

3. Hand spreading or brooming of seal coat aggregate will be required of the Contractor where non-uniform application of seal coat bituminous and/or aggregate occurs, and small irregular areas.

3.07 ROLLING OPERATIONS

A. Conform to WisDOT Spec. 475.3.5, except as modified herein:

1. Rolling operations shall be performed to allow the aggregate to properly be embedded into the binder material prior to the binder "breaking."

2. A minimum of 3 rollers will be required.

3. Compact for a minimum of 3 passes over all areas with 5 passes required on heavily traveled roadways with speed limits greater than 30 mph.

4. Roller speed not to exceed 5 mph.

3.08 INITIAL SWEEPING OF EXCESS AGGREGATE

A. Sweeping operations shall begin approximately **3 to 5 days** after seal coat has been allowed to set up.

B. Engineer to determine the exact date to begin sweeping operations.

C. In the event that the Contractor has not completed the sweeping within the specified time of the completion of application, a penalty of **$300** per calendar day will be charged until the sweeping is completed.

D. Utilize more than 1 power pick-up broom if necessary to meet time requirement.

E. The Contractor shall be responsible for the sweeping and removal of the excess aggregate from the streets and disposal of aggregate off Site.

3.09 SECOND SWEEPING OF EXCESS AGGREGATE

A. Sweeping operations shall begin approximately **30 to 45 days** after initial sweeping.

B. The Contractor shall notify the Engineer of the schedule for this sweeping.

C. In the event that the Contractor has not completed the sweeping within the specified time frame, a penalty of **$300** per calendar day will be charged until the sweeping is completed.

D. Utilize more than 1 power pick-up broom if necessary to meet time requirement.

E. The Contractor shall be responsible for the sweeping and removal of the excess aggregate from the streets and disposal of aggregate off Site.

F. The Owner reserves the right to delete all or a portion of this sweeping at their sole discretion.

3.10 PROTECTION

A. Conform to WisDOT Spec. 475.3.6, except as modified herein:

1. The Contractor shall be responsible for damage done to any adjacent driving surfaces, shoulders, or boulevards.

B. Traffic Control:

1. It will be the Contractors responsibility to install and maintain warning signs at the entrances to developments or the ends of the streets being seal coated:

a. These signs shall be 36 inches by 36 inches with the wording "Loose Rock."

b. Signs equipped with warning lights.

c. Signs to remain in-place until the sweeping of excess aggregate is complete.

d. Signs are incidental to seal coat operations.

2. Flexible Raised Reflector Pavement Marking Devices.

a. Provide new flexible raised reflector pavement marking devices to identify all existing pavement markings where applicable.

b. The color must correspond to the existing pavement markings.

c. Install these devices 3 days prior to seal coating each specific street.
d. The interval or spacing for this work shall be a minimum of 50 feet or where changes are made in the existing stripping.

e. The cost for this work shall be included in the seal coat Bid Items.

3. Traffic rerouting is the responsibility of the Contractor.

4. All flag persons, barricades, flashers, and safety measures are the sole responsibility of the Contractor.

5. Provide sufficient direction and warning signs on the Project to minimize inconvenience to property owners and the traveling public.

6. Provide reasonable access at all times for abutting property owners and for emergency vehicles. Utilize flares or approved flashers from sunset to sunrise if required by the construction.

3.11 FIELD QUALITY CONTROL

A. The Contractor shall submit for review by the Engineer at the Pre-Construction Conference, a report from an independent testing laboratory indicating the gradation, median aggregate size, flakiness index, bulk specific gravity, and loose unit weight of the aggregate being supplied for the Project. This information shall be used to determine the design application rates for the aggregate and bituminous material.

B. The Contractor shall submit for review by the Engineer at the Pre-Construction Conference information regarding the anticipated residual asphalt content of the proposed binder material.

C. The Contractor is responsible for notifying the Engineer of pit location, bituminous supply, scale location, and any other correlated items in advance of starting time, so that adequate control measures can be established.

D. Material shall not be placed in wet conditions. Any material that becomes wet/contaminated prior to the proper curing shall be removed and replaced by the Contractor at the Contractor's expense.

E. Establish traffic control which is compatible to the operations being performed.

END OF SECTION

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SECTION 02920

TURF ESTABLISHMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for seeding, mulching, and fertilizer.

1.02 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - most current edition including all current supplements (WisDOT):

1. Section 627 - Mulching.

2. Section 629 – Fertilizer and Agricultural Limestone.

3. Section 630 - Seeding.

1.03 WARRANTY

A. At the conclusion of the establishment period, which will be 1 year following initial installation, a final inspection of planting will be made to determine the conditions of areas specified for seeding. All areas with insufficient plant establishment as determined by the Town Engineer will be noted. This material shall be re-supplied and planted in the next growing season.

The expectations for the seeded areas are as follows:

1. That they show indications of healthy establishment (90 percent of species occurring are those seeded) in the specified areas and weed species are less than 10 percent.

1.04 PROJECT/SITE CONDITIONS

A. Place temporary seed, permanent seed, fertilizer, and mulch on all disturbed areas.

B. Place erosion mat in accordance with Town standards.

1.05 MAINTENANCE

A. Keep all seeded areas thoroughly moist by watering when rainfall is deficient until an adequate root system develops.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed: Use seed that complies with the requirements of WisDOT Section 630 for Mixture #20 and #40:

1. Place temporary seed conforming to the requirements of WisDOT Section 630.2.1.5.1.2.

2. Place permanent seed conforming to the requirements of WisDOT Section 630.2.1.5.1.1.

B. Mulch: Use straw or hay mulch which conforms to the requirements of WisDOT Section 627.2.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Confirm Town Engineer's acceptance of finish grading prior to seeding.

3.02 APPLICATION

A. Seed in accordance with the applicable requirements specified in WisDOT Section 630.3. Use Method A to sow the seed.

B. Mulch seeded areas in accordance with the applicable requirements of WisDOT Section 627 for Method C mulching.

3.03 FIELD QUALITY CONTROL

A. Provide the Engineer with bags and tags of seed and fertilizer used. Provide the Engineer with the opportunity to observe the loading of seed. No seed will be allowed that was batched more than 1 year prior to placement.

END OF SECTION

SECTION 02965

FULL DEPTH RECLAMATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Reclamation of the existing bituminous surfacing, a portion of the existing underlying base material, and dense graded base (add-rock).

1.02 RELATED SECTIONS

A. Section 02315 – Excavation and Fill.

B. Section 02720 – Aggregate Base Course.

1.03 SEQUENCING AND SCHEDULING

A. Perform boulevard vegetation stripping per Section 02315 prior to reclamation process.

B. Reclamation will be performed at locations shown on the Drawings, and shall include one of the following:

1. Reclaiming a variable depth of existing bituminous pavement, and underlying base material.

2. Reclaiming a variable depth of dense graded base material, variable depth of existing bituminous pavement, and underlying base material.

C. Initial grading/leveling and interim compaction of the reclaimed material by rubber-tired roller is required immediately following the reclamation process.

D. Access to all residents is to be maintained during the reclamation process and tolerancing process.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Base Aggregate Dense – Add-Rock: Conform to Section 02720 and the requirements of WisDOT Spec. 305.2, 100-percent Crushed Stone, except as modified below:

1. Use 1-1/4 inch (31.5 mm) aggregate for all roadway dense graded base course, placement prior to reclamation process.

B. Reclaimed Material – Pulverized Aggregate:

1. The crushed/pulverized bituminous material shall meet the gradation requirement of 100 percent passing the 37.5 mm (1.5 inch) sieve size.

C. Contractor's Gradation Quality Control (QC)

1. The Contractor shall be responsible for gradation control by testing the reclaimed material at a rate of 1 test per 5,000 square yards, with a minimum 1 test per day.

PART 3 – EXECUTION

3.01 GENERAL

A. Create an aggregate base course composed of the existing bituminous pavement and a portion of the existing underlying base material, and new dense grade base material (add-rock) where applicable.

B. The reclamation process cannot be performed during rain events. Compact reclaimed material prior to rain event.

C. Placement of the dense graded base material (add-rock) shall be per Section 02720.

3.02 PREPARATION

A. Provide 48-hours notice to Engineer prior to beginning the reclamation process.

B. Finish grading, compaction, and tolerancing of reclaimed material shall be per Section 02720.

C. Controlling the moisture content of reclaimed material during the final shaping and tolerancing process is incidental to reclamation.

D. Maintain, shape, grade, and compact the reclaimed material within the street section with the use of a motor grader until surfaced is paved.

3.03 EQUIPMENT

A. Notify the Engineer of the equipment to be used at the preconstruction conference:

1. Equipment to be hydrostatically driven.

2. Computerized operation controls.

3. Capable of cutting up to a 12-inch depth in 1 pass.

4. Rotating cutter drum to operate parallel to the existing road surface, providing a uniform section across the entire roadway.

B. Provide enough equipment and qualified personnel to reclaim, tolerance, and compact the reclaimed material.

3.04 THICKNESS REQUIREMENTS

A. Typical Reclaimed Section:

1. Varies for each street. Refer to typical sections on Drawings.

2. Depth of reclamation for each street section, including the depth of dense graded base material if required shall be reviewed by the Engineer prior to reclaiming.

END OF SECTION

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