Standard Specifications and Detail Plates

Prepared for:

Town of St. Joseph, Wisconsin

Stantec

2022

SECTION 00 01 10

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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

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 12 34 56

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Temporary utilities and miscellaneous temporary facilities required during construction.

1.02 REFERENCES

A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - Latest Edition and all current Supplements (WisDOT Spec.).

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

C. "Quality Guidelines for Temporary Traffic Control Devices and Features" - American Traffic Safety Services Association, 2008-2009 edition.

1.03 SUBMITTALS

A. Construction Staging Plan, including the following information:
   1. Sequence of construction and traffic control.
   2. Streets closed or restricted during any stage of construction.
   3. Provisions for routing any detoured traffic as permitted.
   4. Specific signs, striping and other traffic control devices to be utilized.

B. Traffic Control Plan, including the following information:
   1. Haul and access routes.
   2. Traffic Control measures.
   3. Permits or applications required by local authorities.
   4. Temporary facilities required.

PART 2 PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

A. Conform to WisDOT Sec. 643, WisDOT MUTCD, and "Quality Guidelines for Temporary Traffic Control Devices and Features"

2.02 SIGNS AND MARKERS

A. Conform to WisDOT Sec. 637

2.03 FENCE - SAFETY

A. 4-foot-high orange snow fence or approved equal.

PART 3 EXECUTION

3.01 MOBILIZATION

A. Move personnel, equipment, materials, and all other items required to complete the Work at the Site.

B. Establish Contractor facilities necessary for Work on the Project.

C. Temporarily hold or relocate utilities and any miscellaneous structures, such as signs, power poles, guy wires, and mailboxes disturbed.

3.02 SIGNS, MAILBOXES, ETC. REMOVAL AND REPLACEMENT

A. Remove, store carefully, and replace all signs, posts, etc. that may be within the Site as directed by Engineer.
   1. Install temporary signs as necessary.

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

C. Remove existing mailboxes and posts, and store in a safe place, as determined by the Owner, during construction. Install temporary mailboxes in locations approved by the Post Office. Replace mailboxes prior to Substantial Completion. Removal, temporary reinstallation, and replacement shall occur such that mail delivery is not interrupted. Mailboxes, posts, and appurtenances damaged during construction shall be replaced with new at no charge to Owner.

3.03 TEMPORARY UTILITIES

A. Provide and maintain all temporary facilities, utilities, and controls for the duration needed for the safe and proper completion of the Work. Remove all temporary facilities, utilities, and controls as rapidly as progress will permit or as directed by Engineer.

B. Temporary Water for Construction:
   1. Contractor will provide temporary water for construction. No water is available from the Owner. Obtain pumping permits as necessary.

3.04 CONSTRUCTION FACILITIES

A. Sanitary Facilities
   1. Comply with all governing regulations, including safety and health codes, for sanitary fixtures and facilities. Contractor may not use Owner's toilet facilities.

3.05 TEMPORARY CONSTRUCTION

A. Pumping and Dewatering:
   1. Provide draining, pumping, dewatering, and cleaning operations necessary to complete the work.
   2. Provide all necessary pumping to remove all surface water and groundwater from structures as required for the work. Provide erosion control measures for discharge of water, as required by permits and submitted erosion control plan.

3. Protect project site and adjacent property to avoid damage.

3.06 TRAFFIC CONTROL

A. General
   1. The Contractor shall provide and maintain all traffic control devices in accordance with the approved Construction Staging and Traffic Control Plans. All traffic control devices and other protective measures shall conform to the Wisconsin State Manual for Uniform Traffic Control Devices.
      a. Contractor shall provide and maintain advance warning signs on all adjacent roadways that intersect or pass the limits of the road under this Contract.
   2. The Contractor will not be permitted to store materials or equipment within 30 feet of through traffic. If materials or equipment must be stored within 30 feet of through traffic, the Contractor shall provide barricades, drums and/or barriers, as directed by the Engineer, to warn and protect traffic.
   3. The Contractor shall conduct Work in a manner which will allow access to all properties within and adjacent to the Project by fire, police, and emergency vehicles.
   4. Any disruption or closure of any traffic lanes (driving or turn/auxiliary lanes) must be communicated to the following at least 48 hours in advance:
      a. Town Engineer: 612-712-2000
      b. St. Croix County sheriff: 715-386-4701
      c. Town of St. Joseph – Town Chair: 715-222-6235

B. 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 roadways. A minimum of 1 "Road Closed" or "Road Closed Local Traffic Only" signs, size 48 inches by 30 inches, or 60 inches by 30 inches respectively shall be erected on a barrier at each project end.

C. 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.

D. Construction Staging Plan
   1. At the Pre-Construction Meeting, the Contractor shall provide the Engineer with a Construction Staging Plan and a Traffic Management Plan. The Engineer may accept, reject, or suggest alterations to the plans. These plans shall reflect the following conditions:
      a. The Contractor shall provide a method of protecting traffic from open excavation areas.
      b. Minimum through-lane lane widths of 10 feet will be maintained at all times.
      c. 2-way traffic (1 lane in each direction) must be maintained, unless under flagger control.
      d. Segments of the road may be closed temporarily during reconstruction but access to private driveways must be maintained as specified.
      e. The Contractor may request changes to the Construction Staging Plan at any time. No change or deviation will be permitted without approval of the Engineer.
      f. Provide access for emergency vehicles to all residences at all times.
      g. The Contractor will re-establish access to all driveways at the end of each day.

h. The Contractor shall furnish, install, and maintain "ROAD WORK AHEAD" signs in advance of each end of the construction limits. The Contractor shall also furnish, install, and maintain "ROAD WORK AHEAD" signs in advance of the construction limits on 60th St. Signs shall be post mounted at a 5-foot clearance.
i. During trucking operations of material from off-site borrow locations, contractor shall provide advance warning signs before the entrance to the borrow location or pit. Any material tracked from borrow sites or pits must be swept off the roadway in a timely manner at no cost to the Owner.
j. The staging shall be undertaken to provide street access and local access to adjacent properties as directed by the Engineer. The Engineer may modify the requirements for traffic control as deemed necessary due to field conditions.
k. Contractor shall remove traffic control devices at the conclusion of the Work.
l. The use of flaggers shall conform to the Wisconsin MUTCD.

E. Vehicle Warning Light
1. All Contractors', subcontractors', and suppliers' mobile equipment and vehicles operating in the work zone shall be equipped with "high-intensity rotating, flashing, oscillating, or strobe lights" in accordance with Section 6.F.81 of the MUTCD.

F. Temporary Lane Closures
1. Temporary Lane Closures shall conform to the following:
a. A "short-term" lane closure or traffic restriction shall be one that is in-place only during the Contractor's work hours.
b. The Contractor shall furnish, erect, and maintain all traffic control devices required for these closures. No direct compensation will be made for temporary lane closures.
c. Lane closures will not be permitted during inclement weather, nor any other time when, in the opinion of the Engineer, the lane closures will be a hazard to traffic.

G. Drop Offs Over 2 inches and Uneven Lanes
1. Stage work in a manner as to limit vertical drop offs more than 2 inches where traffic is permitted.
2. If a vertical drop off must be present, provide appropriate warning signing and vertical panels or delineator drums along the area of the drop off in accordance with section 104.6.1.2.3 of the WisDOT Spec.
3. If uneven lanes are present at the end of a paving day, provide "UNEVEN LANES" signs at each end of the travelled way.
4. Provide warning signs for shoulder drop offs between placing final lift of pavement and placing shouldering material.

H. Traffic Control Devices
1. Any traffic control device deemed to be in "unacceptable" condition by the Engineer shall be replaced with an acceptable device. Engineer shall determine device conditions based on the "Quality Guidelines for Temporary Traffic Control Devices and Features" guide.
2. Contractor shall daily inspect and ensure that all traffic control devices are properly maintained and shall be immediately rectified if necessary. At least 1 nighttime inspection shall be made each week to assess for visibility and reflectivity.
3. The Contractor shall furnish qualified flagpersons and flagger ahead signs when needed.
4. Furnish names and phone numbers of at least 3 individuals responsible for the placement and maintenance of traffic control devices. At least 1 of these individuals shall be "on call" 24 hours per day, 7 days per week during the time any traffic control devices

furnished and installed by the Contractor are in place. The contact information for these individuals shall be distributed to the following:
   a. Town Engineer
   b. St. Croix County Sheriff
   c. Town of St. Joseph, WI
5. Respond to any request from the Engineer to improve or correct the usage of traffic control devices on or related to this Project within 1 hour of the time of notification.

I. Failure to Complete the Work On Time
1. The Contractor will be subject to an hourly charge for failure to maintain the traffic control devices. Non-compliance charges, for each incident, will be assessed at a rate of $250 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.

3.07 TEMPORARY BARRIERS AND ENCLOSURES

A. Temporary Barriers
1. Provide temporary covers, enclosures, markers, and barriers as necessary to protect Work.
2. Damage to the Site caused by removal of temporary fencing, including postholes, shall be promptly repaired by Contractor. During removal at no time shall the Work remain unattended if a dangerous condition exists because of incomplete removal or Site repairing.
3. Provide barriers, markers, and/or covers for any utility potholes to the extent necessary for safety of the Public and Personnel. Potholes should be filled in as soon as reasonably possible.

B. FENCE - SAFETY
1. Install as directed by the Engineer in the Field.
2. Maintain and repair fence throughout the duration of the Project.

3.08 CONSTRUCTION AND DEMOLITION DEBRIS

A. The Contractor shall at all times keep the site, including all private or public property involved in or adjacent to the site, free from any rubbish, surplus, or waste materials.

B. The Contractor shall remove all surplus materials, tools, and equipment leaving the site and all portions of the finished work clean, unobstructed and ready for use before Final Completion will be granted. After written notification, the Owner may remove all rubbish, surplus, or waste materials which the Contractor has neglected or refused to remove from the site and deduct the costs of such removal from any monies due the Contractor.

C. The Owner or its Representative shall have the right to regulate the work in order to control objectionable dust, mud, or other nuisances in or adjacent to the area of the site.

D. The Contractor must arrange for a disposal site for all debris and rubble which is to be removed from the site.

E. Salvaged materials may be stored temporarily, but not beyond the date specified for completion of the contract. All other materials shall be promptly removed as demolition progresses and properly disposed of. The debris shall be disposed of at a DNR licensed landfill site or other DNR approved site and Contractor shall pay any fees required for

dumping or usage of the dump site. The Contractor shall provide evidence that said material was properly disposed of.

F. The Owner has first right to excavated material not used for backfill or grading purposes. Any excavated material in excess of that required by the Owner shall become the property of the Contractor.

G. Contractor's costs for disposal of material shall be included in Contractor's bid price for the various items of this Contract and no extra or additional payment shall be made for this work.

3.09 STREET AND RIGHT-OF-WAY USE

A. The Contractor shall furnish the Engineer with a listing of all proposed haul routes for approval prior to commencement of work.

B. Parking of Contractor's or employee's vehicles shall not interfere with parking of local residents, or obstruct any traffic control device.

C. Construction vehicles may not be parked on roadways overnight.

D. Contractor shall be responsible to keep all streets, drives, and parking lots in the area free of mud, clay, gravel, and other materials which vehicles or equipment may track or scatter onto them, or which may be deposited by uncontrolled drainage of water directly onto streets or drives.

E. Frequency of cleaning shall be based upon amount of material deposited, not necessarily done on a fixed schedule.

F. Contractor failure to comply with these requirements within twenty-four hours after being given notice by the Owner will result in the Owner having streets cleaned and deducting costs from amount due Contractor.

G. Vehicles and equipment shall not be flushed out or dumped onto any streets, drives, walks, gutters, or on grounds of any private property.

H. Contractor shall maintain dust-free roadways at all times. Roadway surfaces shall be kept watered.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED SECTIONS

A. Section 31 23 00 – Excavation and Fill.

B. Section 32 92 00 – Turf and Grasses.

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.
   3. Section 645 – Geosynthetics.

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

C. Wisconsin Construction Site Best Management Practice Handbook.

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 ensure 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 (MS).

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 EROSION MAT

A. Conform to WisDOT Section 628.2.2.

2.04 INLET PROTECTION: CONFORM TO THE REQUIREMENTS OF WISDOT SPEC 628.2.12.

A. Type FF geotextile fabric.

2.05 TEMPORARY CONSTRUCTION ENTRANCE (TRACKING PAD)

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.

2.06 DITCH CHECKS: PER DETAILS ON DRAWINGS.

2.07 FLOATING SILT CURTAIN: CONFORM TO THE REQUIREMENTS OF WISDOT SPEC. 628.2.7.

2.08 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.

2.09 OTHER EROSION CONTROL PRODUCTS

A. For erosion control products and devices not listed in this Part, comply with Details in the Drawings, WisDOT Standard Specification 628, WisDOT Standard Detail Drawings, WisDOT Product Acceptability List, and relevant Wisconsin DNR Conservation Practice Standards

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 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, the Contractor shall 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

SECTION 02 41 13

SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

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

B. Related Sections
   1. Section 31 23 00 – Excavation and Fill.

1.02 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.
   2. 690 – Sawing.

1.03 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.

1.04 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.

1.05 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 31 23 00.

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.

C. Saw cut pavement in neat, straight lines, at right angles to the street or drive to produce a clean joint.

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. Saw cut 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. Saw cut 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. Saw cut 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. Saw cut 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. Salvage operations conform to WisDOT Spec. 204.3.1.

B. 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.
      b. Remove and salvage all posts, A-frame angle brackets, stringers, as well as the nuts, bolts, and washers.
      c. Exercise reasonable care against damage to in-place signs during storage and installation.
      d. Remove signs damaged during construction and replace with new signs.

C. 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.

D. 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.

E. 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. Salvaged items to be reinstalled shall be of the same shape, dimension, location, and quality of the original item prior to construction.

B. 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.

C. If joints/sawcuts are damaged during construction, saw cut edges again immediately prior to paving at no cost to the Owner.

3.16 DISPOSING OF MATERIAL

A. Conform to WisDOT Spec. 203.3.5.

B. 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

SECTION 31 10 00

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 Related Sections

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.
   3. 625 – Topsoil and Salvaged Topsoil.

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 to provide for 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 prior to the work of this Section.

PART 2 PRODUCTS

2.01 WOUND DRESSING

A. Asphalt base 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.

C. Stockpile soil to eliminate contamination with other onsite materials.

3.02 CLEARING AND GRUBBING

A. Clearing Trees: Cut off, remove, and dispose of trees and brush in the areas designated as a clearing operation. When grubbing is not required, the point of cut off shall be 6 inches above the ground.

B. Clearing Brush: Cut even with the ground surface.

C. Grubbing: Remove brush, stumps, roots, and other remains to a minimum depth of 6 inches below subgrade.

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

E. 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 or areas to be occupied by structures, walks, roadways, and other areas as shown.

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.

3.04 DISPOSAL

A. Dispose of all timber and debris outside of the Project limits in accordance with WisDOT Spec. 201.3.

B. Stripped materials not used for embankments shall be disposed of off-Site.

C. Burial of any debris on site is not permitted.

D. Burning is not allowed on site.

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.

C. Exercise care to keep salvaged material as clean as possible during operations.

END OF SECTION

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SECTION 31 23 00

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 31 23 13 – 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 208 – Borrow.
   4. Section 209 – Granular Backfill.
   5. 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 EXCAVATING 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.
   5. Provide and maintain temporary drainage facilities until permanent facilities are completed.
   6. 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. 205.3.11 and 205.3.12, 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 EMBANKMENT MATERIALS

A. Conform to WisDOT Spec. 207.3.

3.06 COMPACTING EMBANKMENTS

A. Conform to WisDOT Spec. 207.3.6.2 and WisDOT Spec. 207.3.6.3, 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 FINISHING OPERATIONS

A. Conform to WisDOT Spec. 211.

END OF SECTION

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SECTION 31 23 13

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

1. Section 31 23 00 - 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 Tandem 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.

3.04 FINISH OPERATIONS

A. Remove rock over 6 inches in any dimension that is visible on the subgrade.

B. Tolerance:
   1. A tolerance within 0.05 foot from the proposed subgrade elevations shall be maintained.
   2. Subgrade shall maintain positive drainage in normal-crown cross sections.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE COURSES

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 31 23 13 – Subgrade Preparation.

B. Section 33 40 00 – Storm Drainage Utilities.

C. Section 32 12 16 – Hot Mix Asphalt Pavement.

D. Section 32 16 13 – Curbs and Gutters.

E. Section 32 13 14 – 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 – Base, Subbase, and Subgrade Aggregate.
   2. Section 305 – Dense Graded Bases.

1.04 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.

1.05 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.

B. Finish shouldering must be placed within seven days of asphalt paving.

PART 2 PRODUCTS

2.01 MATERIALS

A. Base Aggregate Dense: Conform to the requirements of WisDOT Section 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.
   2. Use 3/4 inch (19.0 mm) 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 SHOULDERING

A. Use equipment that does not damage or mar the adjacent pavement surfaces.

B. Do not place aggregate on the pavement. Keep pavement surface free of loose aggregate.

C. Spread, water, and compact the aggregate in compacted layers of 6 inches (150mm) or less. Use standard compaction conforming to WisDOT 301.3.4.2 unless specified otherwise by the Engineer.

D. After final compaction, shape the shoulders to ensure proper drainage.

3.05 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 32 11 25

FULL DEPTH RECLAMATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reclamation of the existing bituminous surfacing and a portion of the existing base material. Add rock.

1.02 RELATED SECTIONS

A. Section 31 23 00 - Excavation and Fill.

B. Section 31 23 13 - Subgrade Preparation.

C. Section 32 11 23 - Aggregate Base Courses.

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 211 – Preparing the Foundation.
   2. Section 325 – Pulverized and Re-laid Pavement.

1.04 SEQUENCING AND SCHEDULING

A. Perform boulevard vegetation stripping per Section 31 10 00 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 32 11 23 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 32 11 23.

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 32 11 23.

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

SECTION 32 12 16

HOT MIX ASPHALT PAVEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hot plant mixed asphalt-aggregate mixtures for asphalt binder and surface courses and driveways.

B. Asphaltic tack coat.

1.02 RELATED SECTIONS

A. Section 32 11 23 - Aggregate Base.

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 SUBMITALS

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.
   2. Density testing will per performed by Nuclear Density Gauge. Provide laboratory theoretical maximum specific gravity (gmm) to the technician daily.
   3. Provide 1 bulk sample daily to the testing technician, for each mix used.

1.06 SEQUENCING AND SCHEDULING

A. Aggregate base to be completed and approved by the Engineer prior to placement of bituminous surfaces.

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

C. Install asphalt and associated shoulders.

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. Surface Course: Nominal size of aggregate shall be 9.5mm for all pavement mixtures, unless otherwise approved by the Town Engineer. Recycled material shall not be incorporated into the Surface Course.
   2. Binder Course: Nominal size of aggregate shall be 12.5mm for all pavement mixtures, unless otherwise approved by the Town Engineer.
   3. 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 58-34S (surface course) and PG 58-28s (base course) 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.

E. Asphalt Driveway Material: Mix Type 5LT 58-34 S, Nominal Size 9.5 mm.

PART 3 EXECUTION

3.01 GENERAL

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

B. The proposed sequence shall address the longitudinal seams, compaction, traffic control, haul routes, and equipment to be used.

C. Joints:
   1. Where new construction meets existing asphalt surfacing and driveways, the existing surface shall be uniformly milled or saw-cut straight and asphaltic tack coat applied prior to the placement of each hot mix asphalt course (lift). Where a transverse construction joint or vertical wedge is left at the end of the day, construct a wedge utilizing paving paper. Cut new joints if damage occurs to the vertical edge.

3.02 PREPARATION

A. Dense Graded Aggregate Base Course: Prepare the Dense Graded Aggregate Base Course as required in Section 32 11 23 - Aggregate Base Course.

B. Hot Mix Asphalt:
   1. Sweep the surface clear of leaves, sticks, dirt, and other debris.
   2. Apply tack at the rate of 0.05 gallon per square yard.
   3. Tack the full surface of in-place street before paving.

4. Tack all vertical edges, including the edges of concrete curb and gutter, tie-ins, and longitudinal seams.
5. Tack full face of existing bituminous transitions, including patches.

3.03 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 cleanup 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.

3.04 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.

3.05 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.

3.06 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

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SECTION 32 12 36

SEAL COATS

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 32 12 80 - Flexible Paving Joint Construction.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Latest Edition and all current Supplements (WisDOT Spec.):
   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 Materials (ASTM):
   1. D5624-95 – Standard Method for Determining the Transverse Spread Rate for Surface Treatment Application.

1.03 SEQUENCING AND SCHEDULING

A. The Contractor must provide the Engineer and Owner 3-weeks' notice before starting the Work in general.

B. Provide Engineer access to the stockpiled aggregate 14-days prior to the start of construction to allow time for the necessary testing.

C. Contractor shall be responsible for sourcing a stockpiling and staging location.

D. Prior to starting Work, the Contractor shall meet the Engineer and Owner to discuss the method and means of material, means of material supply, a work schedule, and a general review of the Specifications.

E. The Contractor shall notify the Engineer of any repairs needed to the pavement prior to seal coating.

F. The Contractor is responsible for notification to the residents restricting parking and roadway use during the seal coating operations. Notify residents 48 hours minimum in advance of Work.

G. Crack route and sealing, and Transverse Joint Repairs must be completed prior to Seal Coating.

1.04 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 by overlapping at the crown of the roadway in two passes.
   1. Bituminous extensions ("bump-outs") for mailboxes and driveway aprons shall receive seal coat treatment integral with that of the roadway.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bituminous Material
   1. Conform to WisDOT Spec. 455, Asphaltic Materials.
      a. Cationic CRS-2P.

B. Seal Coat Aggregate
   1. Conform to WisDOT Spec. 475, **or**,
   2. Conform to MnDOT Spec. 3127 for FA-2.

PART 3 EXECUTION

3.01 RESTRICTIONS

A. Conform to WISDOT Spec. 475 except as modified herein:
   1. Seal coating operations shall be conducted only between 7 A.M. and 7 P.M, Monday through Friday, except holidays.
   2. 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.
   3. Establish traffic control that is compatible with the operations being performed.
   4. Contractor shall be responsible for removing all debris resulting from the Work.
   5. Seal coating operations shall not commence until the relative humidity is less than 70 percent and the air temperature is above 70 degrees F, unless otherwise approved by the Owner.
   6. 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.

3.02 EQUIPMENT

A. Conform to WisDOT Spec. 475.3.2, except as modified herein:
   1. Aggregate spreader shall be a self-propelled and computerized.

3.03 SURFACE PREPARATIONS

A. All street surfaces shall be 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.

D. Cover all manhole and gate valve box covers with fine aggregate or sand prior to seal coating, so that seal coat material does not adhere to the cover surface
   1. Clean all fine aggregate and seal coat material from manhole and gate valve box covers once Work is completed.
   2. Dispose of all fine aggregate and seal coat material off-Site

3.04 BITUMINOUS MATERIAL APPLICATION

A. Conform to WisDOT Spec. 475.3.4, except as modified herein:
   1. Application rates shall be modified only as directed by the Engineer or an authorized representative.
   2. Application rates will be determined based on existing surface conditions and traffic volumes, and aggregate properties. Application rate to be set within the first 800 lane-feet test strip.
   3. Pre-apply bituminous material over pavement markings before full application.

3.05 AGGREGATE APPLICATION

A. Conform to WisDOT Spec. 475.3.5, except as modified herein
   1. Application rates shall be 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 with 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 bitumen and/or aggregate occurs, and small irregular areas.

3.06 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 "breaks."

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 15 mph.

3.07 INITIAL SWEEPING OF EXCESS AGGREGATE

A. Sweeping operations shall begin approximately 10 days after seal coat has been allowed to set up. Leave "Loose Rock" signs in place until sweeping is complete.

B. Engineer to determine the exact date to begin sweeping operations.

C. If the Contractor has not completed the sweeping within the specified time of the completion of application, a penalty of $100 per calendar day will be charged until the sweeping is completed.

D. Utilize more than 1 power broom if necessary, to meet time requirement.

E. Sweep excess material to the roadway inslopes and ditches. Remove swept material from shoulders, intersections, and driveways.

3.08 SECOND SWEEPING OF EXCESS AGGREGATE

A. Schedule 30 to 45 days from the date of the initial sweeping of the excess aggregate material.

B. The Contractor shall notify the Engineer of the schedule for this sweeping.

C. Sweeping preformed by 1 or more power brooms.

D. If the Contractor fails to perform the second sweeping within the time frame specified, a penalty of $100 per calendar day will be charged until the sweeping is complete.

E. Sweep excess material to the roadway inslopes and ditches. Remove swept material from shoulders, intersections, and driveways.

F. The Owner reserves the right to delete all or portions of this sweeping at their sole discretion.

3.09 PROTECTION

A. Surface Protection
   1. Conform to WisDOT Spec. 475.3.6, except as modified herein
   2. 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 and 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 to remain in-place until the first sweeping of excess aggregate is complete.
      c. All Traffic Control is incidental the Project.

2. Flexible Raised Reflector Pavement Marking Devices
    a. Provide new flexible raised reflector pavement marking devices to identify all existing pavement centerline markings where applicable.
    b. The color must correspond to the existing pavement markings.
    c. Install these devices 5-days prior to seal coating.
    d. The interval or spacing for this work shall be a minimum of 100-feet or where changes are made in the existing striping.
    e. The cost for this work shall be incidental to the Project.
3. Traffic rerouting is the responsibility of the Contractor.
4. All flag persons, pilot cars, 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.

3.10 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.

END OF SECTION

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SECTION 32 12 80

FLEXIBLE PAVING JOINT CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Joint construction for bituminous pavements by a method of route and seal, and sealing of existing cracks.
   2. Transverse joint repair and levelling by means of a hot-applied, fiber reinforced asphaltic mastic material.

B. Related Sections
   1. Section 32 12 36 - Seal Coats.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Latest Edition and all current Supplements (WisDOT Spec.)
   1. 455 – Asphaltic Materials.
   2. 475 – Seal Coat.

1.03 SUBMITTALS

A. Submit the following items:
   1. Product and data sheet for joint sealant material and joint repair material from approved WisDOT Products List.
   2. Manufacturer's recommendations pertaining to preparation, heating and application of joint sealant and joint repair material.

1.04 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 been previously routed and sealed, but where the sealant has since failed.

C. Transverse Joint Repair: Preparing and applying an elastomeric, fiber-reinforced, hot-applied asphaltic mastic product to an existing pavement joint that has become cupped, distressed, or depressed for the purposes of levelling and sealing.

1.05 SEQUENCING 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. Route and seal of existing joints shall be completed prior to bituminous pavement treatments.

C. 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

1. Conform to WisDOT Spec 455, except as modified herein:
   a. Joint sealant shall conform to ASTM D 6690 Type II, except as modified herein:
      1) Cone Penetration at 25 degrees C (77 degrees F), 150 g, 5 s ……60-90.
      2) Bond at -29 degrees C (-20 degrees F , 3 cycles, 100% extension……..Passes.
      3) Mandrel bend test at -34 degrees C (-29 degrees F), 25 mm (1 inch) mandrel….No Cracking.
      4) Resilience at 25degrees C (77 degrees F), minimum % …..……..40.
2. Protective paper covering shall consist of 1-ply toilet paper, or may be substituted for a detackifier agent.

2.02 TRANSVERSE JOINT REPAIR MATERIALS

1. CRAFCO INC Fiber Asphalt Sealant 540 or approved equal.
2. Aggregate Cover Material shall be clean and free of contaminants and able to adhere to the mastic material curing curing.

PART 3 EXECUTION

3.01 GENERAL

A. Perform work operations during daylight hours, but only between 7 A.M. and 7 P.M.

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

C. The completed joint repair treatment shall have a homogeneous appearance and a uniform texture.

D. Joint and crack repair shall extend into integral bituminous bump outs for mailbox access and driveway aprons. Include paved shoulders.

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 degrees F.

3.03 SAWCUTTING OF JOINTS

A. Route and seal and saw and seal joints shall be cut using blades of such size and configuration such that the resulting joint reservoir shape conforms to details in the Project Manual.
   1. A single saw cut shall be made if the configuration consists of multiple reservoir shape.
   2. Extend the full width of the pavement, including any bituminous “bump-outs” for mailboxes or driveway aprons.
   3. Dry or wet cutting is allowed.

B. Joint Reservoir Size
   1. Route and Seal: 3/4-inch wide, 3/4-inch depth.

C. Route and seal joints shall include all existing random joints, longitudinal or transverse with a width less than 3/4 of an inch.
   1. Contractor shall not saw and seal alligator cracking or severe block cracking.

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

3.06 APPLICATION

A. The application rates shall be in conformance with the manufacturer's requirements for the specific equipment being used. The rates shall be reviewed by the Engineer prior to application.

B. 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.

C. Stage work to maintain traffic access in one lane.

D. Multiple lifts may be required for Transverse Joint Repair if the depth of the depressed joint is greater than the manufacturer allowed application depth in one pass.

E. Use a straight edged rake or screed to spread and level the Transverse Joint Repair material to a sufficient width to restore a longitudinally level and flush roadway.

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. Follow 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. 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 Contractor shall be responsible for damage done to any adjacent driving surfaces, shoulders, boulevards, driveways, or mailboxes.

3.09 FIELD QUALITY CONTROL

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

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

C. Do not place sealant if Engineer determines the weather and roadbed conditions to be unfavorable or precipitation is forecasted within 2 hours.

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

END OF SECTION

SECTION 32 13 14

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 31 23 00 - Excavation and Fill.

B. Section 31 23 13 - Subgrade Preparation.

C. Section 32 11 23 - Aggregate Base Courses.

D. Section 32 16 13 - Concrete Curbs and Gutters.

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. 415 – Concrete Pavement.
   2. 501 – Concrete.
   3. 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 501.2.4
      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 32 11 23 - Aggregate Base.
      b. Granular Sub-base Material: Conform to Section 31 23 00.

F. Truncated Dome Panels: Use WisDOT APL 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 of the aggregate base or granular material to support the concrete work shall conform to Section 32 11 23 or Section 31 23 13.

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 415.3.13 - 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 32 16 13

CURBS AND GUTTERS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

B. Related Sections
1. Section 32 11 23 – Aggregate Base Courses.
2. Section 32 12 16 – Hot Mix Asphalt.
3. Section 32 16 13 – Concrete Walks, Medians, and Driveways.
4. Section 33 40 00 – Storm Drainage Utilities.

1.02 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. 415 – Concrete Pavement.
2. 501 - Concrete.
3. 601 – Concrete Curb and Gutter.

1.03 SUBMITTALS

A. Submit one 7-day and two 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.

1.04 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. 601: Concrete, except as modified below:
1. Portland Cement:
a. Conform to WisDOT 501.2.

b. Concrete shall be air-entraining.
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. 3-day Compressive Strength Requirement: 3,500 psi.
   d. 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 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 415.2.4.
   1. Curing compound shall contain a fugitive dye.

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 ¬> 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 32 11 23 – Aggregate Base (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-20.

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 415.3.13 - 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 32 17 23

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 Marking.
   2. Section 2582 – Pavement Marking:

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.

B. Glass Beads shall conform to the requirements of WisDOT Spec 646.2.2.

2.02 EQUIPMENT

A. All pavement marking equipment shall conform to the applicable requirements of WisDOT Spec. 646.3.

PART 3 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. Paint 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.
   2. Edge lines and lane lines are to be broken only at intersections with public roads and at private entrances if they are controlled by a yield sign, stop sign, or traffic signal.
   3. The break point is to be at the start of the radius for the intersection or at marked stop lines or crosswalks.

B. Paved 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. 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.
      b. Length: Broken line segments may vary up to 2-3/4 inches from the specified lengths provided the over and under variations are reasonably compensatory.

c. Alignment: Deviations from the control guide shall not exceed 2-inches.
2. Material shall not be applied over longitudinal joints.
3. 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.

B. Paint/Epoxy
1. Minimum thickness: Conform to WisDOT Spec. 646.3.1.2.
2. Lines shall be applied once.

C. Glass Beads
1. Shall be applied immediately after application of paint or epoxy markings.
2. Rate of application shall be in accordance with WisDOT Spec. 646.3.

3.05 CORRECTION OF DEFECTS

A. All pavement markings not conforming to the requirements of the Specifications shall be removed and replaced, or otherwise repaired to the satisfaction of the Engineer.

B. Where yield computations show a deficiency in material usage of not more than 20-percent, Owner may require satisfactory repair or may accept the Work at a reduced Bid Unit Price that is in direct proportion to the percent of the deficiency.

C. Where yield computations show a deficiency in material usage in excess of 20-percent, Owner will require removal and replacement to the satisfaction of the Engineer, unless other means are approved by the Engineer.

D. If removal and replacement is required, at least 90-percent of the deficient line shall be removed.

E. Width of removal shall be 1-inch wider on all sides than the nominal width of the marking to be removed.

F. Removal of unacceptable Work shall be accomplished with suitable blasting or grinding equipment, unless other means are authorized by the Engineer. Bituminous street surfacing shall not be damaged by the removal operation.

END OF SECTION

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SECTION 32 92 00

TURF AND GRASSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Section Includes
   1. 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 SUBMITTALS

A. Producer's certificate of compliance – written documentation verifying compliance of mixture of seed furnished. Include percentage of various seed species, year of production, germination rate, and weed seed content. Submit to Town Engineer at least 5 days prior to delivery.

1.05 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.

1.06 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 630.2.1.5.2.
   2. Place permanent seed conforming to the requirements of WisDOT Section 630.2.1.5.1.

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

C. Fertilizer: All fertilizer shall conform to WisDOT Section 629. Fertilizer shall be Type A as specified in Section 629.2.1.2

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.

C. All seeded areas shall be kept properly watered and maintained during the establishment period.

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 33 05 05

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Trenching requirements for underground piping 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

1. Section 31 23 00 – Excavation and Fill.
2. Section 33 40 00 - Storm Drainage Utilities.

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. 206 – Excavation for Structures.
   2. 207 – Embankment.
   3. 209 – Granular Backfill
   4. 608 – Storm Sewers

B. American Society of Testing Materials (ASTM)
   1. C1479 - Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations.
   2. D698 - Test Method for Laboratory Compaction Characteristics for Soil Using Standard Effort (12,400 ft-lbf/ft).
   3. D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

1.04 SUBMITTALS

A. Provide the following submittals consistent with Section 01 33 00:
   1. Product Data for each Borrow Material:
      a. Name and location of source.
      b. Results of gradation tests.

1.05 DEFINITIONS

A. 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 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.

1.06 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 Diggers 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 and compact all trench excavations promptly after the pipe is laid.

1.07 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. Conform to Standard Detail BED-02.
   2. Comply with WisDOT Spec. 209.2.2, Grade 2 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 sieve requirement of WisDOT Spec. 501.2.7.2.
   2. Coarse Aggregate: Use a well-graded coarse aggregate conforming to the size of the requirements of WisDOT Spec 501.2.7.3.

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. Separate vegetative strippings from salvageable topsoil and dispose of appropriately.

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 Excavation
        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 depends on the depth of trench and 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 ensure 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 pipeline 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 pipeline 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.

3.08 FIELDQUALITY 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 33 05 17

ADJUST MISCELLANEOUS STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adjusting catch basin, manhole and inlet covers.

1.02 RELATED SECTIONS

A. Section 33 40 00 – Storm Drainage Utilities.

B. Section 32 12 16 – 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):

B. American Society of Testing and Materials (ASTM)
   1. ASTM A48 – Specification for Gray Iron Casting.
   2. ASTM A240 – Specification for Heat – Resisting Chromium – Nickel Stainless Steel Plate Sheet and Strip for Pressure Vessels.
   3. ASTM C6 – Specification for Normal Finishing Hydrating Lime (Mortar).
   4. ASTM C141 – Specification for Hydraulic Hydrated Lime for Structural Purposes (Mortar).
   5. ASTM C150 – Specification for Portland Cement (Concrete Rings/Mortar).
   6. ASTM C923 – Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Materials.
   7. ASTM D1248 – Polyethylene Plastics Molding and Extrusion Materials.

1.04 DEFINITIONS

A. Adjust Frame and Ring Casting: A change in rim elevation accomplished for manholes or catch basins 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 3,000 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 Preparation: Sandblast.
   4. Machine cover and frame contact surface for non-rocking protection.
   5. 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 ounces 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 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 to verify exact location of existing utilities.

3.03 ADJUST 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 than 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 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 pay 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

SECTION 33 40 00

STORM DRAINAGE UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

B. Riprap.

1.02 RELATED SECTIONS

A. Section 33 05 17 – Adjust Miscellaneous Structures.

B. Section 33 05 05 – Trench Excavation and Backfill for Utilities.

C. Section 32 11 25 – Aggregate Base.

D. Section 32 16 13 – 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 209 – Granular Backfill.
   2. Section 520 - Pipe Culverts.
   3. Section 521 – Corrugated Steel Culverts.
   4. Section 530 – Corrugated Plastic Pipe Culverts.
   5. Section 606 – Riprap.
   6. Section 645 – Geosynthetics.

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.
   11. M294 – Specification for Corrugated Polyethylene Pipe (12-in. to 60-in. Diameter)

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. Riprap.
   5. Corrugated steel pipe and endwalls.
   6. Corrugated polyethylene 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.

C. Corrugated Polyethylene Pipe and Endwalls
   1. Corrugated polyethylene shall conform to the requirements of WisDOT Spec. 530.2.

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 33 05 05 – Trench Excavation and Backfill for Utilities.

B. By-Pass Pumping: Contractor 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 Corrugated Polyethylene Pipe and Endwalls:
   1. Corrugated Steel Pipe: Conform to the requirements of WisDOT Spec. 521.3, except as modified below:
   2. Corrugated Polyethylene Pipe: Conform to the requirements of WisDOT Spec. 530.3, except as modified below:
   3. Modifications:
      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 pipeline 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 and all corrugated polyethylene 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 pipeline 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:
12. 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 33 05 17 – 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. 645.3.1.6.

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

Manhole/Catch Basin Field Elevation Report

Stantec

Project:	Date:
Owner:	Contractor:
Stantec Resident Project Representative:	Contractor's Representative:
Stantec Project No:	Owner Project No:

Contractor is required to complete this form before payment of structure is approved.

Structure Location				Structure Type (circle one)	Design Invert (from Plan)	As-Constructed Invert Elevation *	Difference (+ / -)	Comments / Quality Assurance
Structure No.	Structure Station	Direction of invert/flow	Street Name or Easement Location					
				MH CB Apron				
				MH CB Apron				
				MH CB Apron				
				MH CB Apron				
				MH CB Apron				
				MH CB Apron				
				MH CB Apron				
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				MH CB Apron				

*** - As-Constructed Invert Elevation provided by Contractor from measurements taken in the field to nearest 0.01 feet.**

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SECTION 34 41 05

TRAFFIC SIGNS AND DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Signs, signposts, and hardware.

1.02 REFERENCES

A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Latest Edition and all current Supplements (WisDOT Spec.)
   1. 634 – Wood and Tubular Steel Signposts.
   2. 637 – Signing.

B. Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD).

PART 2 PRODUCTS

2.01 MATERIALS

A. Sign Material
   1. Sign Panel Base Material: Sheet aluminum conforming to the material requirements of WisDOT Spec. 637.2.1.3.
   2. Sign Face Material for Sign Panels: High Intensity Reflective sheeting conforming to the requirements of WisDOT Spec. 637.2.2.2, Type H.
   3. Sign Legend Material for Signs: Conforming to the requirements of WisDOT Spec. 637.2.3.

B. Sign Hardware
   1. Conforming to the material requirements of WisDOT Spec. 637.2.4.2.1.

C. Tubular Steel Signposts
   1. All signposts shall conform to WisDOT Spec. 634.2.5.

PART 3 EXECUTION

3.01 GENERAL

A. Unless otherwise noted or modified herein, all sections of WisDOT Specs 634 and 637, all sections of WisDOT's Standard Signs Manual, and the Wisconsin MUTCD shall apply.

B. The fabrication of all signs and hardware shall conform to WisDOT Spec. 637 and the latest edition of the MUTCD.

C. New signs are not designated on the Drawings. Engineer will designate the location of the new signs in the field. Mounting hardware is not to be salvaged. New mounting hardware shall be incidental to the Salvage and Reinstall Sign Bid Item.

D. Salvaged signs shall be reinstalled with the existing post if possible. Use of a new Tubular Steel Post for salvaged signs to be determined by Engineer in the field.

3.02 CONSTRUCTION

A. New sign locations are not shown on the Drawings. The Engineer will stake locations for reinstallation of new and salvaged signs.

B. Install nylon washers between the bolt and the sign face (sheeting). Do not over tighten bolts to the point where the sign sheeting separates from the sign backing, which would be cause for rejection and replacement at no additional cost to the Contract. The nylon washers used to protect the sign face shall be 1/32-inch thick, have a maximum inside diameter of 3/8-inch, and outside diameter of 7/8-inch. There shall also be a stainless-steel washer between the nylon washer and the bolt head.

C. The bottom section of each signpost shall be mounted into the ground to a minimum depth of 3-1/2 feet. Where 2 or more single post signs are mounted side by side, they shall be reinforced laterally by at least 2 post sections, bolted at each post, and located approximately at the quarter points.

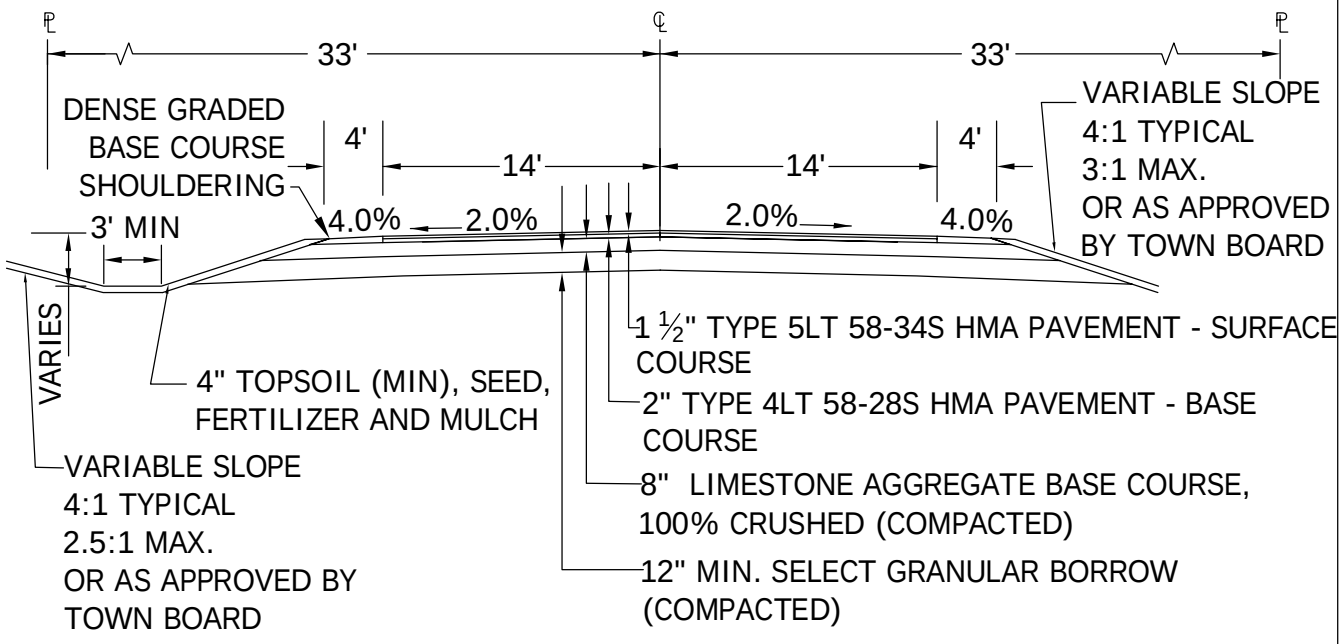
END OF SECTION

DETAIL PLATES

TOWN OF ST. JOSEPH, WISCONSIN

2022

Stantec



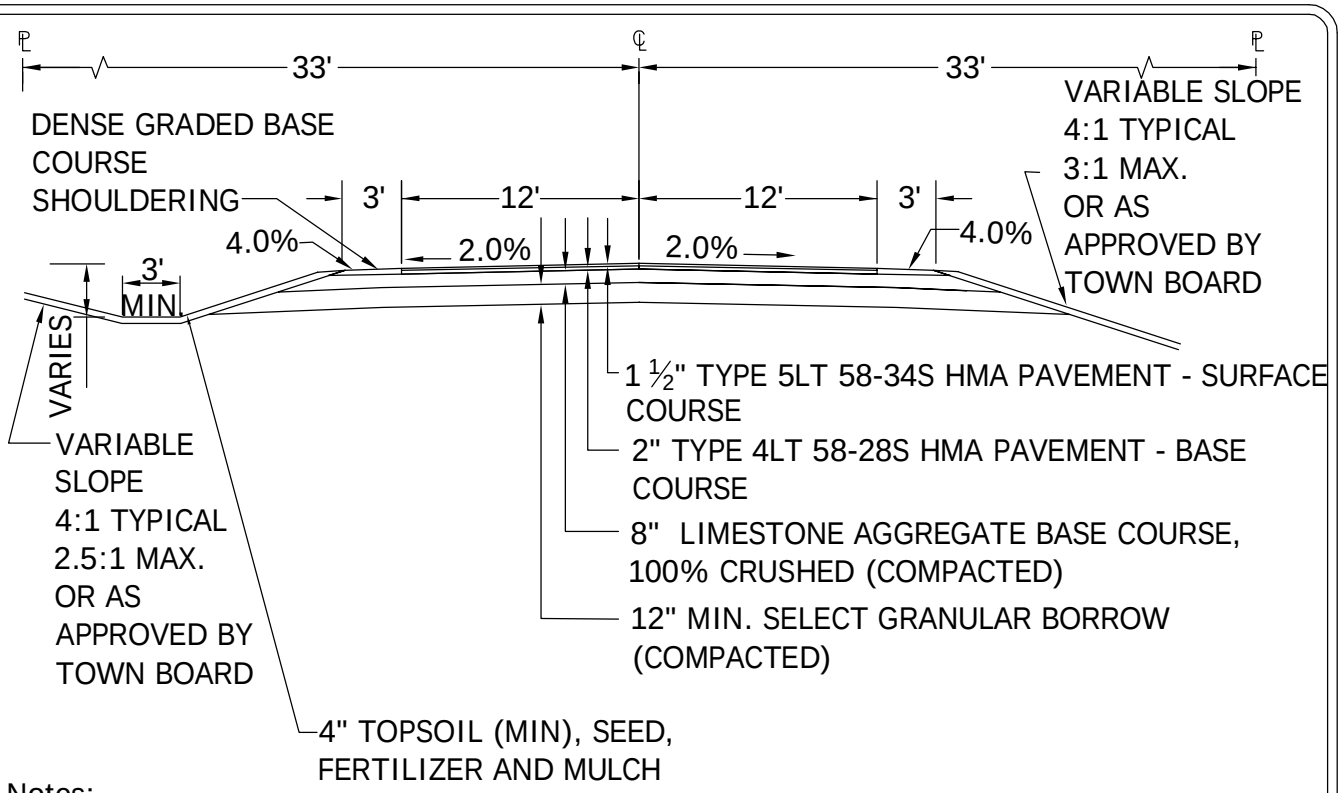
Notes:

1. Decomposable material shall not be used in construction.
2. Tack coat to be applied between asphalt lifts.
3. Intersection angle of driveway to road or road to road shall not be less than 75°.
4. Culverts to be 18" minimum size, or as approved by town board and installed with a minimum cover of 12" to the top of the select granular material. All culvert pipes shall be galvanized corrugated steel, high density polyethylene (HDPE), arch, or reinforced concrete in conformity with American Association of State Highway & Transportation Officials (AASHTO) Specification.
5. Roadway slopes as they enter other roads are limited to 2% grade for the first 50 ft and are measured from the edge of pavement. Exceeding this restriction will require town board approval.
6. Roadway slopes shall not exceed 8% in grade, or as specified by the Town of St. Joseph.
7. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval.
8. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

COLLECTOR ROAD TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
APRIL 2021

PLATE NO.
RD-01



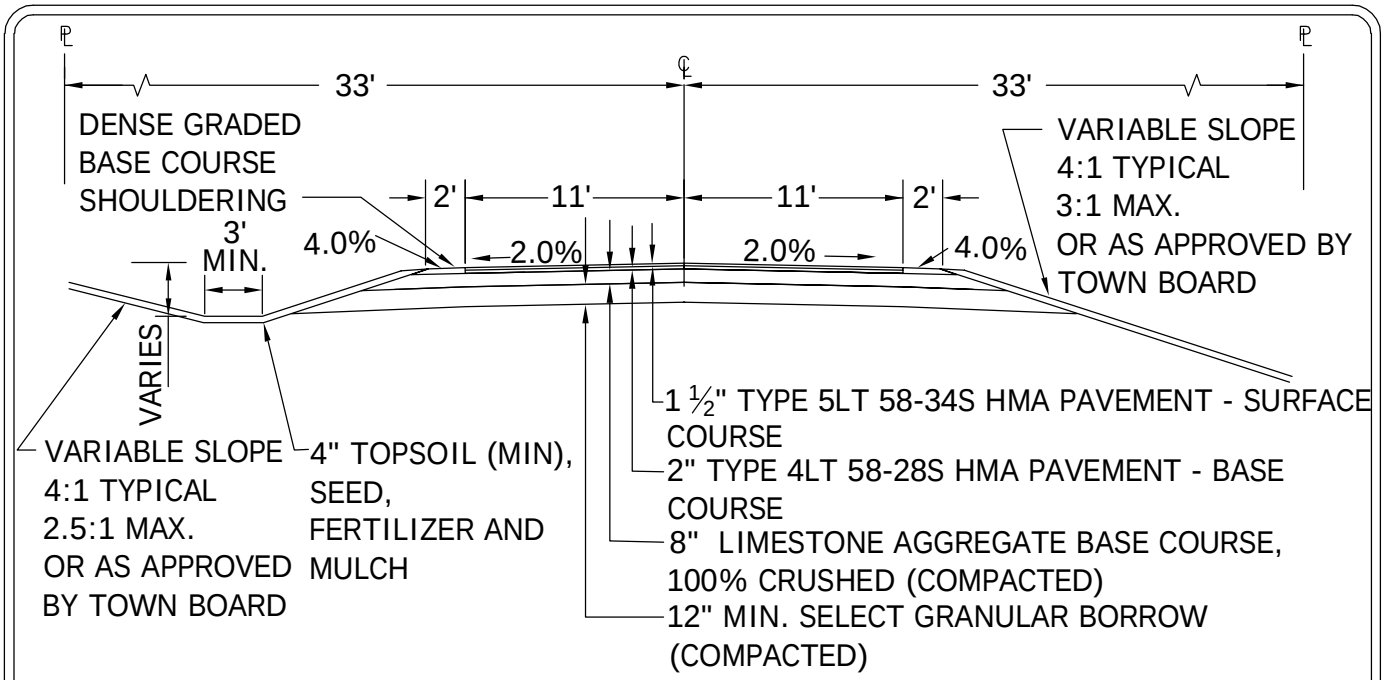
Notes:

1. Decomposable material shall not be used in construction.
2. Tack coat to be applied between asphalt lifts.
3. Intersection angle of driveway to road or road to road shall not be less than 75°.
4. Culverts to be 18" minimum size, or as approved by town board and installed with a minimum cover of 12" to the top of the select granular material. All culvert pipes shall be galvanized corrugated steel, high density polyethylene (HDPE), arch, or reinforced concrete in conformity with American Association of State Highway & Transportation Officials (AASHTO) Specification.
5. Roadway intersection slopes are limited to 2% grade for the first 50 ft and are measured from the edge of pavement. Exceeding this restriction will require town board approval.
6. Roadway slopes shall not exceed 8% in grade or as specified by the Town on St. Joseph.
7. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval.
8. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

SUBCOLLECTOR ROAD TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
APRIL 2021

PLATE NO.
RD-02



Notes:

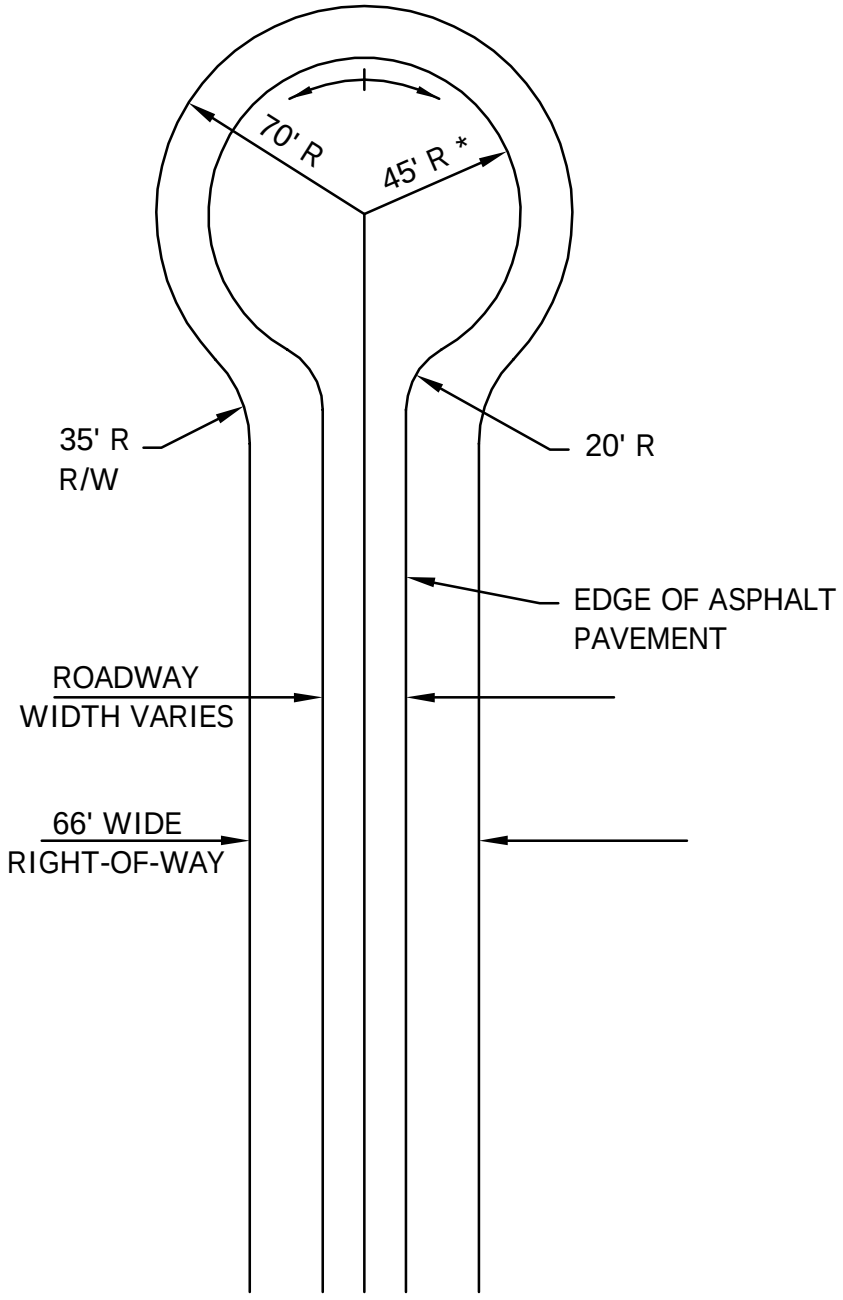
1. Decomposable material may not be used in construction.
2. Tack coat to be applied between asphalt lifts.
3. Intersection angle of driveway to road or road to road shall not be less than 75°.
4. Culverts to be 18" minimum size or as approved by town board, and installed with a minimum cover of 12" to the top of the select granular material. All culvert pipes shall be galvanized corrugated steel, high density polyethylene (HDPE), arch, or reinforced concrete in conformity with American Association of State Highway & Transportation Officials (AASHTO) Specifications.
5. Roadway intersection slopes as they enter other roads are limited to 2% grade for the first 50 ft and are measured from the edge of pavement. Exceeding this restriction will require town board approval.
6. Roadway slopes shall not exceed 8% in grade, or as specified by the Town of St. Joseph.
7. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval.
8. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

ACCESS ROAD TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
APRIL 2021

PLATE NO.
RD-03

* - 47' FOR COMMERCIAL ROADS

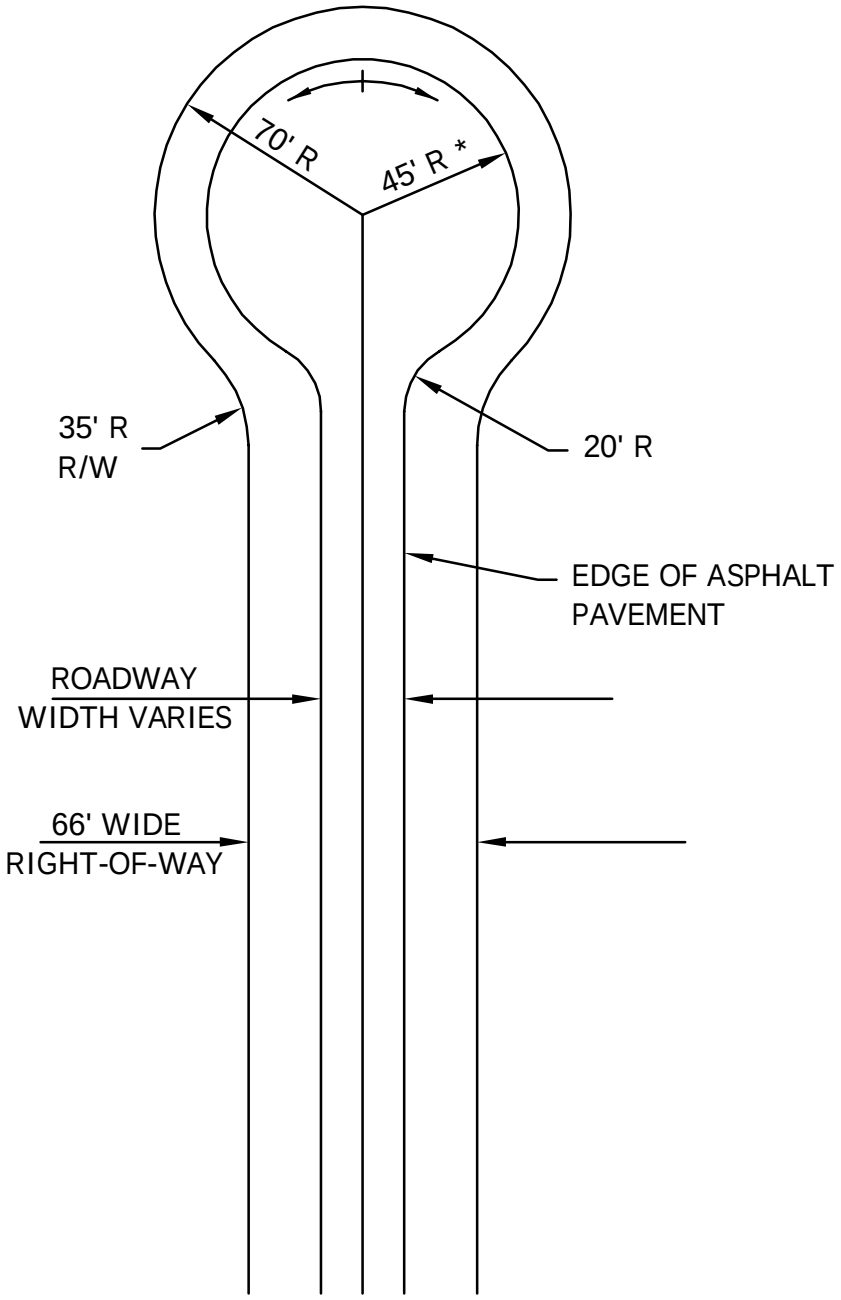


SUBCOLLECTOR ROAD CUL-DE-SAC
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
OCT 2016

PLATE NO.
RD-04

* - 47' FOR COMMERCIAL ROADS

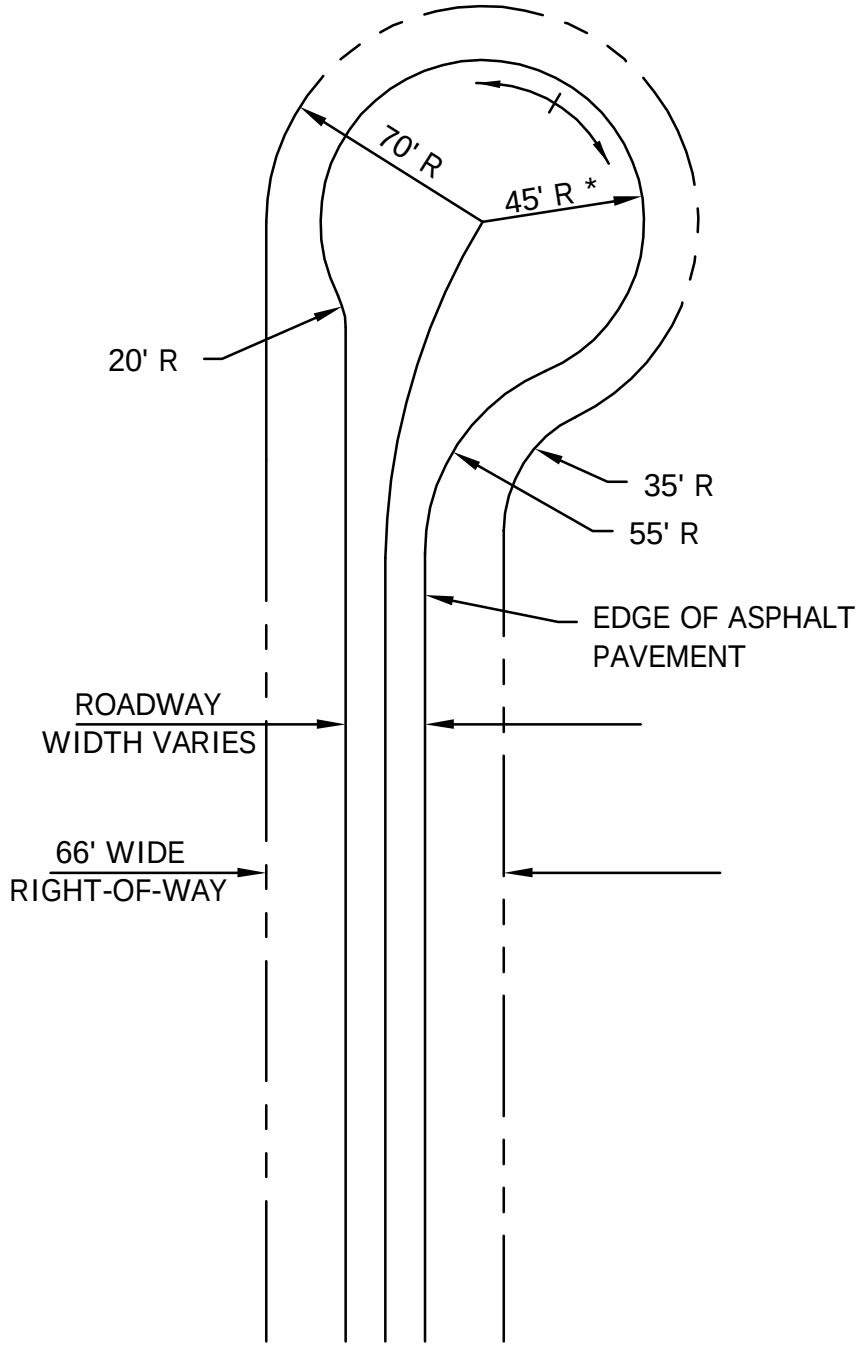


ACCESS ROAD CUL-DE-SAC
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
OCT 2016

PLATE NO.
RD-05

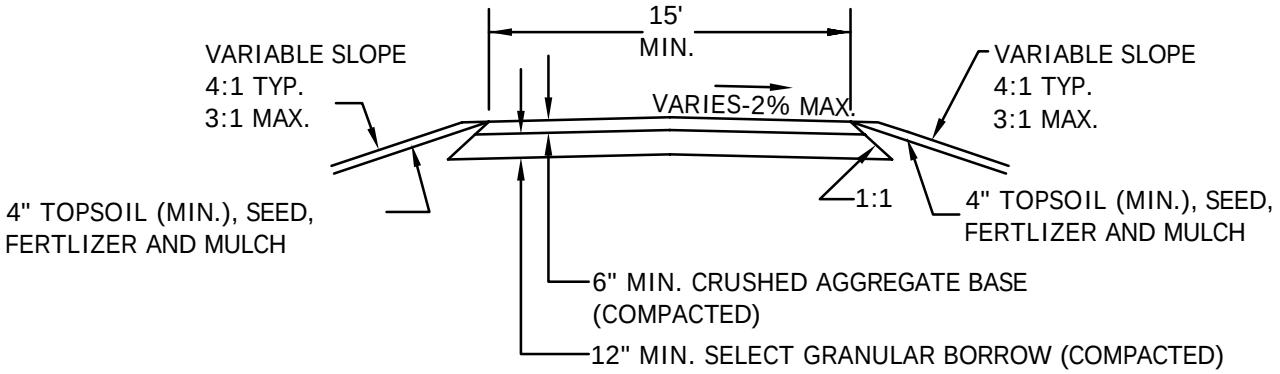
* - 47' FOR COMMERCIAL ROADS



OFFSET CUL-DE-SAC FOR ACCESS OR SUBCOLLECTOR ROAD
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
OCT 2016

PLATE NO.
RD-06



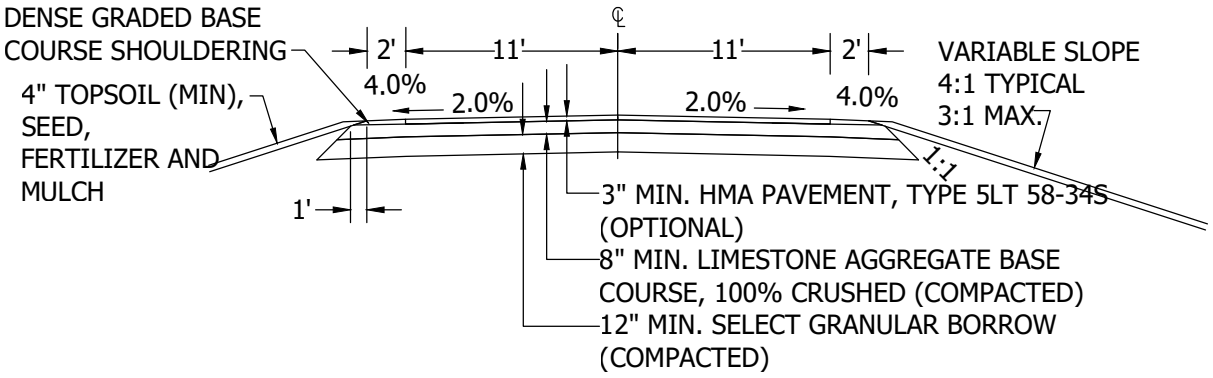
Notes:

1. Decomposable material shall not be used in construction.
2. If desired an asphaltic or concrete pavement at a minimum of 10 ft in width shall be centered on the 15 foot minimum aggregate base. Pavement thickness should be consistent with the town's required minimum weight load.
3. Driveways that require a culvert shall use a 15" minimum pipe, unless otherwise specified by the Town of St. Joseph, with a minimum cover of 12" to the top of the select granular material. All culvert pipes shall be galvanized, corrugated steel, arch, high-density polyethylene (HDPE) or reinforced concrete in conformity with WISDOT standards.
4. Intersection angle of driveway to road or road to road shall not be less than 75°.
5. All driveways shall have a width clearance of at least 15 ft, with a height clearance of at least 14 ft, and shall be maintained in such a way as to allow for adequate emergency vehicle access.
6. All driveways shall be constructed to the road right-of-way as part of the roadway construction. To qualify for a building permit, driveways must be extended not less than 50 ft in length from the edge of the traveled road surface into the lot. The final driveway must be constructed from the public roadway to the building location.
7. A minimum distance of 200 feet spacing shall exist between driveways and/or intersecting roadway as measured from centerline of driveways and/or roadway along the centerline of intersecting roadway.
8. All driveways in excess of 300 ft which terminate in a dead end shall have a 14 ft height clearance and shall terminate at a turnaround with either a minimum 45 ft radius or sufficient area and design to enable the turnaround of a tandem axle truck of at least 40 ft in length.
9. Driveways shall be constructed to sustain a minimum weight load of 9 tons/axle.
10. Driveway slopes as they enter other roads are limited to 2% grade for the first 50 feet and are measured from the edge of pavement or driving surface. Exceeding this restriction will require town board approval.
11. Remaining driveway slopes shall not exceed 8% in grade. Exceeding this restriction will require town board approval.
12. Approved erosion and sediment control measures per WISDOT's product acceptability list shall be installed and approved prior to, during and after construction. If applicable, suitable erosion and sediment control plans shall be submitted to the town for review and approval with the preliminary plat.

RESIDENTIAL DRIVEWAY
TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
FEB. 2021

PLATE NO.
RD-08



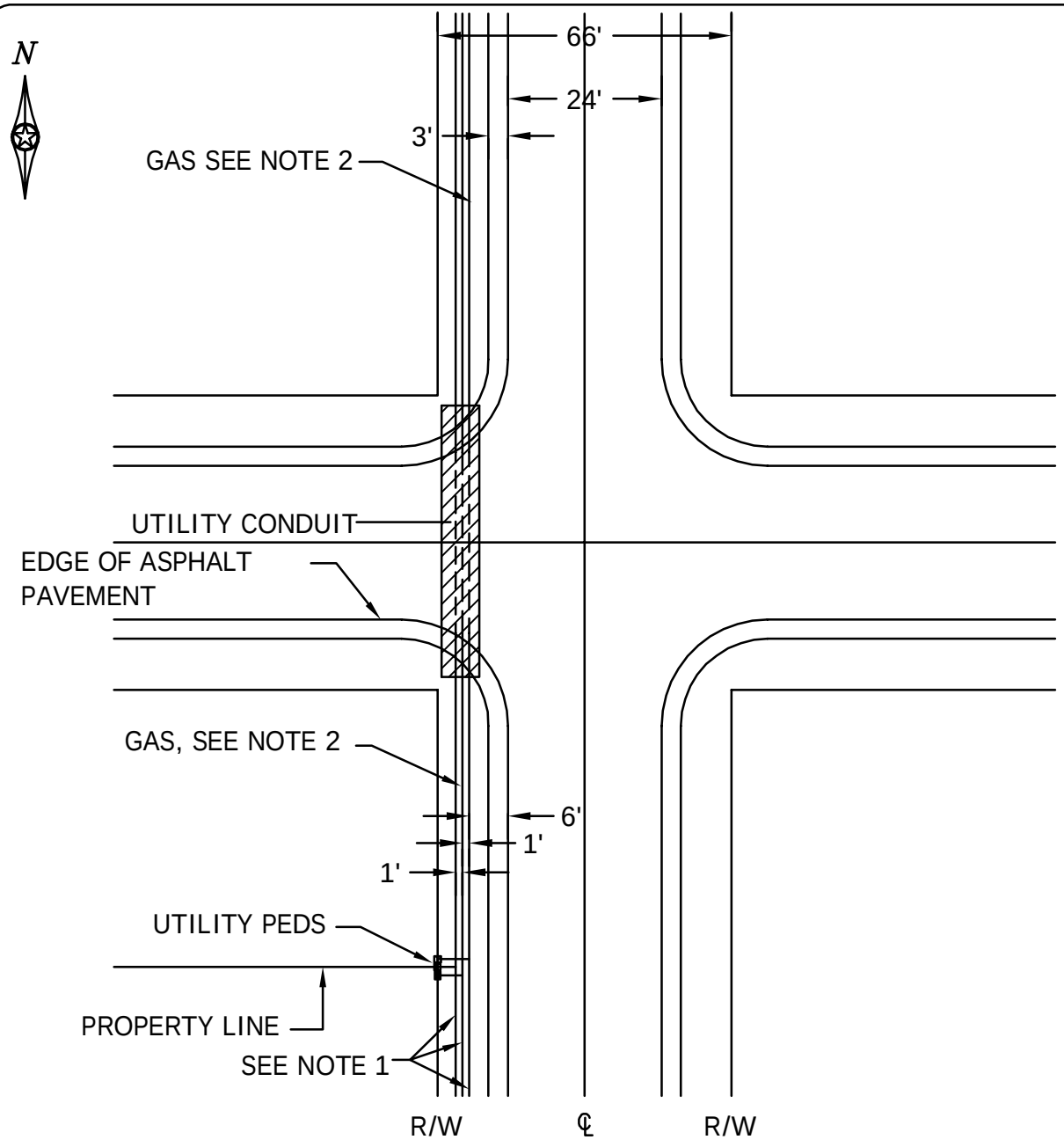
Notes:

1. Decomposable material shall not be used in construction.
2. Driveways that require a culvert shall use a 15" minimum pipe, unless otherwise specified by the Town of St. Joseph, with a minimum cover of 12" to the top of the select granular material. All culvert pipes shall be galvanized, corrugated steel, arch, high-density polyethylene (HDPE) or reinforced concrete in conformity with WISDOT standards.
3. Intersection angle of driveway to road or road to road shall not be less than 75°.
4. A double residential driveway shall be constructed from the road to the right-of-way line. The remaining shared driveways shall conform to either this detail plate or the residential driveway plate RD-08 as determined by the Town Board.
5. A minimum distance of 200 feet spacing shall exist between driveways and/or intersecting roadway as measured from centerline of driveways and/or intersecting roadway along the centerline of intersecting roadway.
6. All driveways in excess of 300 ft which terminate in a dead end shall have a 14 ft height clearance and should terminate at a turnaround with either a minimum 45 ft radius or sufficient area and design to enable the turnaround of a tandem axle truck of at least 40 ft in length.
7. Driveways shall be constructed to sustain a minimum weight load of 9 tons/axle.
8. Driveway slopes as they enter other roads are limited to 2% grade for the first 50 ft and are measured from the edge of pavement or driving surface. Exceeding this restriction will require town board approval.
9. Remaining driveway slopes shall not exceed 8% in grade. Exceeding this restriction will require town board approval.
10. Approved erosion and sediment control measures per WISDOT's product acceptability list shall be installed and approved prior to, during and after construction. If applicable, suitable erosion and sediment control plans shall be submitted to the town for review and approval with the preliminary plat.

DOUBLE RESIDENTIAL DRIVEWAY TYPICAL SECTION TOWN OF ST. JOSEPH WISCONSIN

LAST REVISION:
FEB 2021

PLATE NO.
RD-09



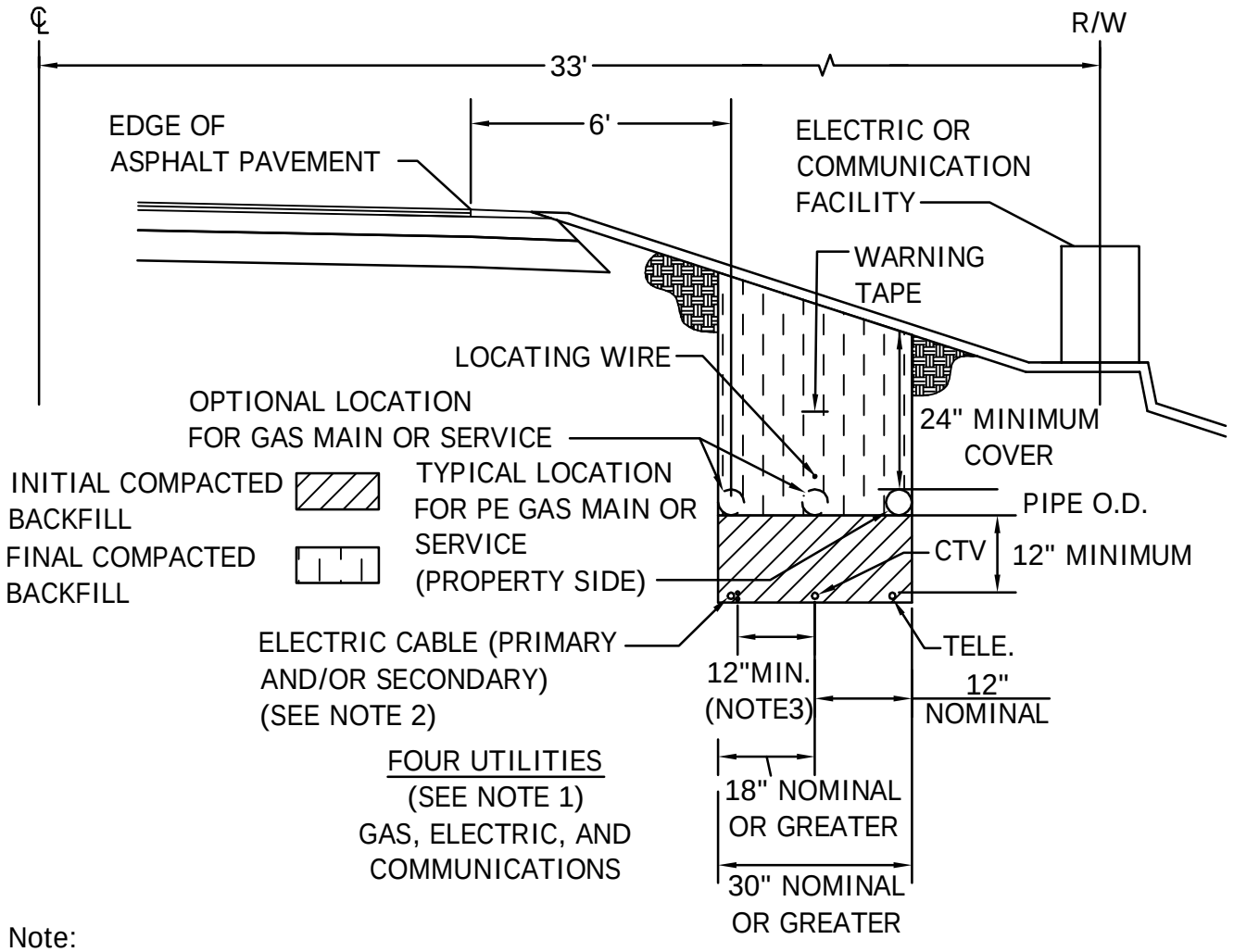
Note:

1. See plate no. RD-11 for typical private utility joint trench construction detail.
2. Gas typically located vertically over ctv, or alternatively over electric or telephone lines.
3. Utility conduit placed before street construction.

TYPICAL UTILITY LOCATIONS
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-10



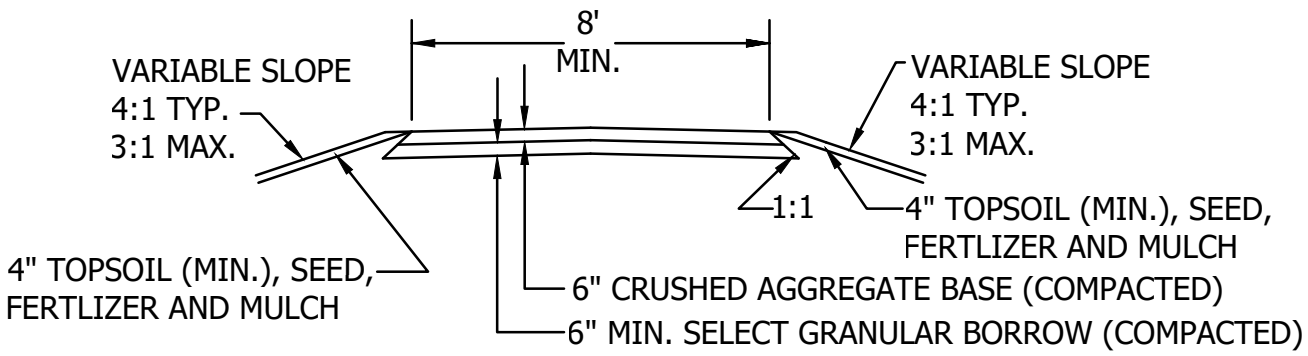
Note:

1. Communication cables may be buried with random separation provided all parties are in agreement.
2. Electric cables may be buried with random separation provided all parties involved are in agreement; however, 3 phase and 1 phase cables should be separated (1" or more apart) preferably on opposite sides of the trench.
3. Horizontal or vertical separation between electric cables and communication cables should be 12" minimum. Vertical clearance between gas pipe and cables should be 12" minimum.
4. Horizontal separation between gas pipes and cables at the same level should be a minimum of 12" to 24".
5. Warning tape if used shall be installed using methods agreed upon by each of the utility companies involved.
6. Locating wire shall be installed with gas pipe (and with any other cables or piping not having a metallic content that can be used for magnetic locating) using standard installation methods.

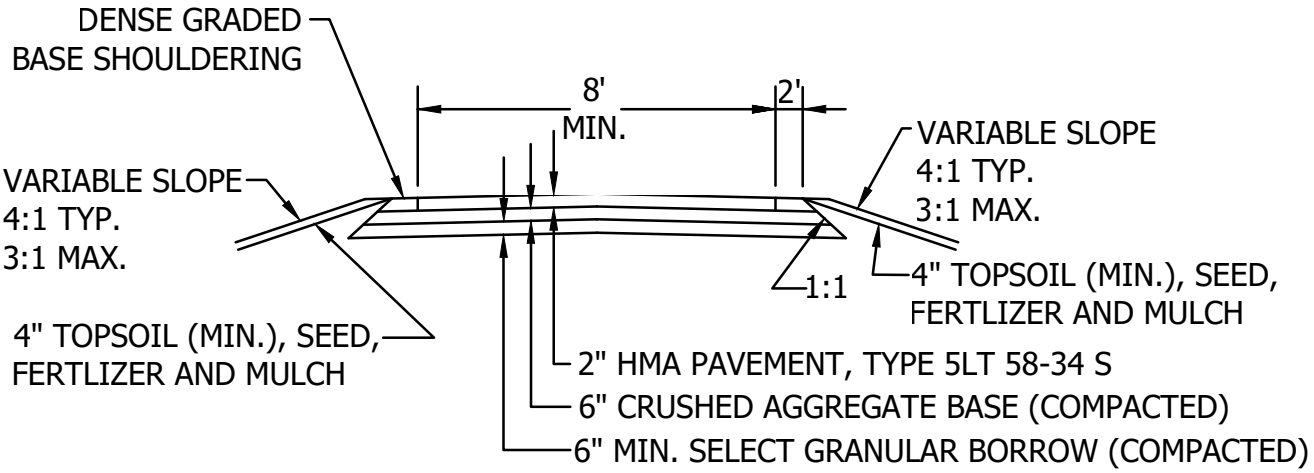
TYPICAL UTILITY
JOINT TRENCH CONSTRUCTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-11



GRAVEL TRAIL SECTION



ASPHALT TRAIL SECTION

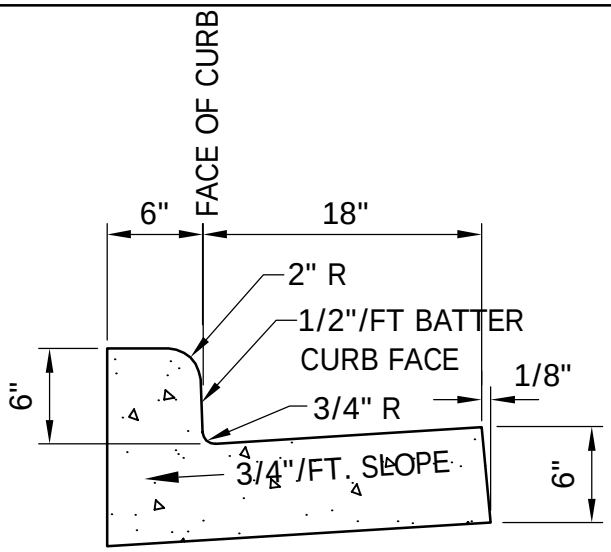
Notes:

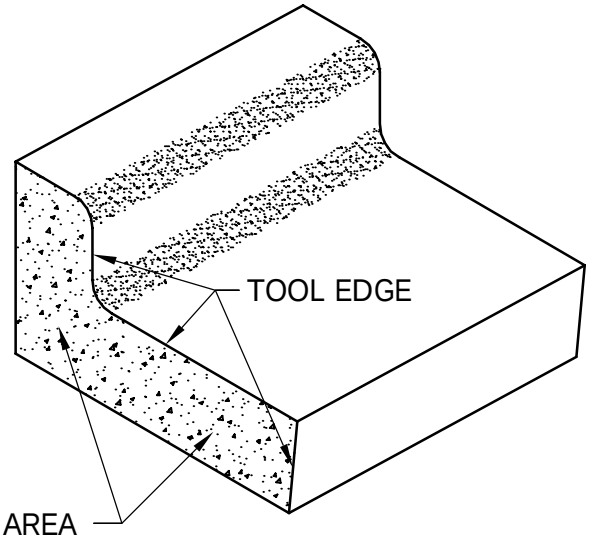
1. Decomposable material shall not be used in construction.
2. 2" asphaltic pavement at a minimum of 8 ft in width to be used on paved trails only.
3. All trails shall be designed to ADA requirements, or as specified by the Town of St. Joseph.
4. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

TRAIL TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

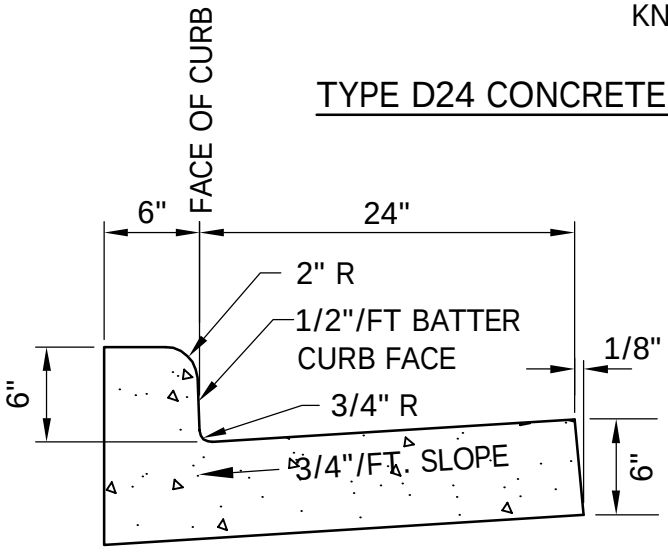
LAST REVISION:
FEB. 2021

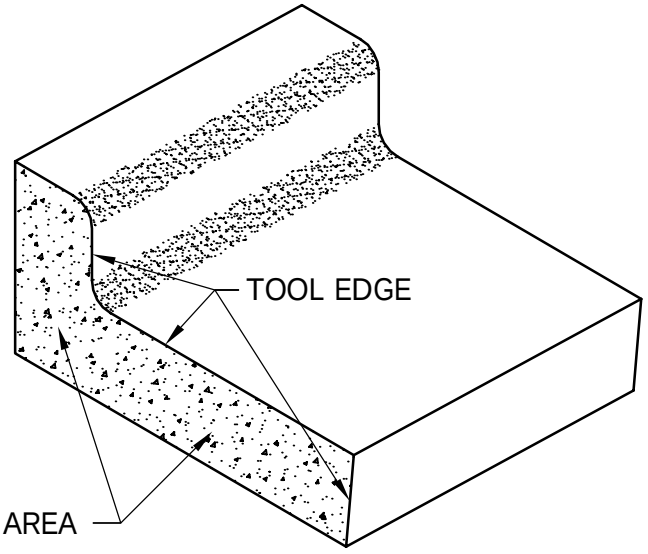
PLATE NO.
RD-12





TYPE D24 CONCRETE CURB & GUTTER





TYPE D30 CONCRETE CURB & GUTTER

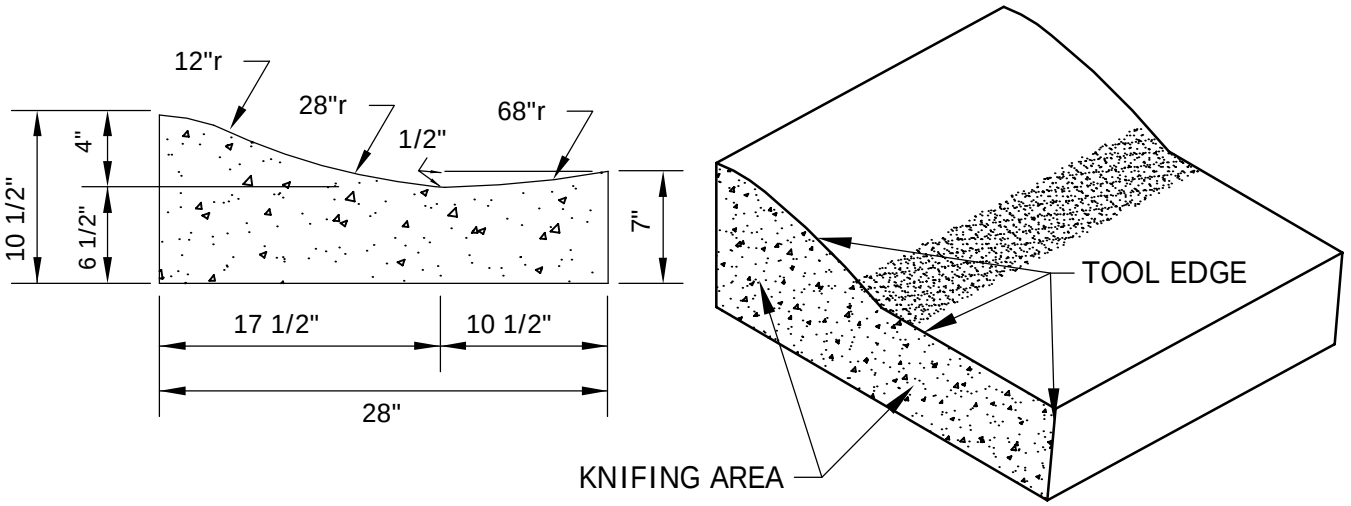
NOTES:

1. ALL EXPANSION AND CONSTRUCTION JOINTS SHALL BE TOOLED ALONG ENTIRE TOP AND FACE OF CURB AND GUTTER AND KNIFED THROUGH ENTIRE DEPTH.
2. FOR CURB & GUTTER IN AREA OF PEDESTRIAN RAMP, SEE DETAIL PLATE RD-19.

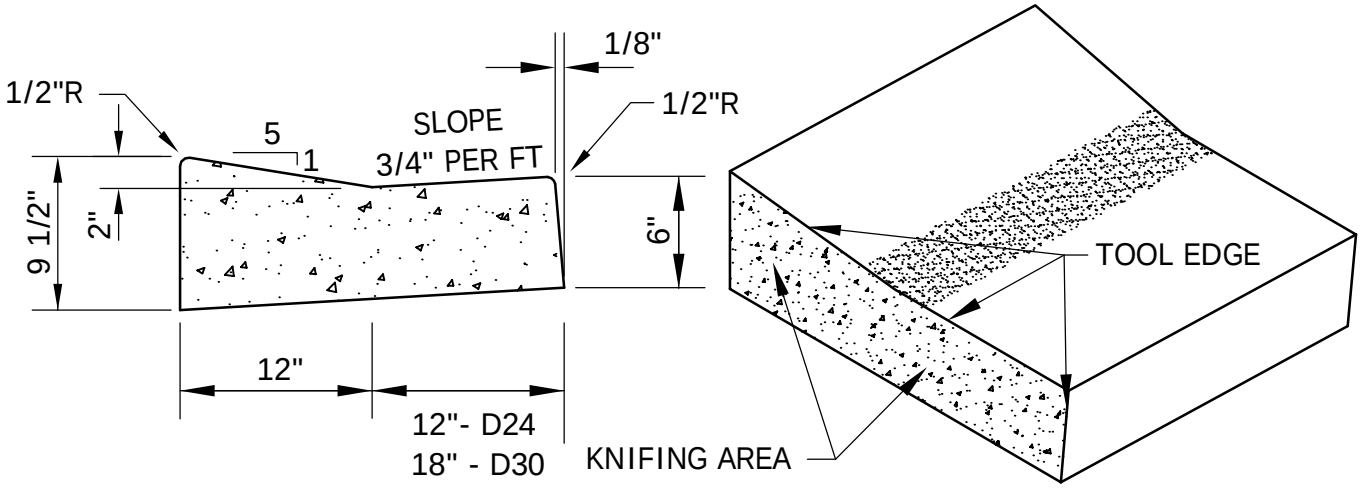
CONCRETE CURB & GUTTER
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-13



SURMOUNTABLE



DRIVEWAY

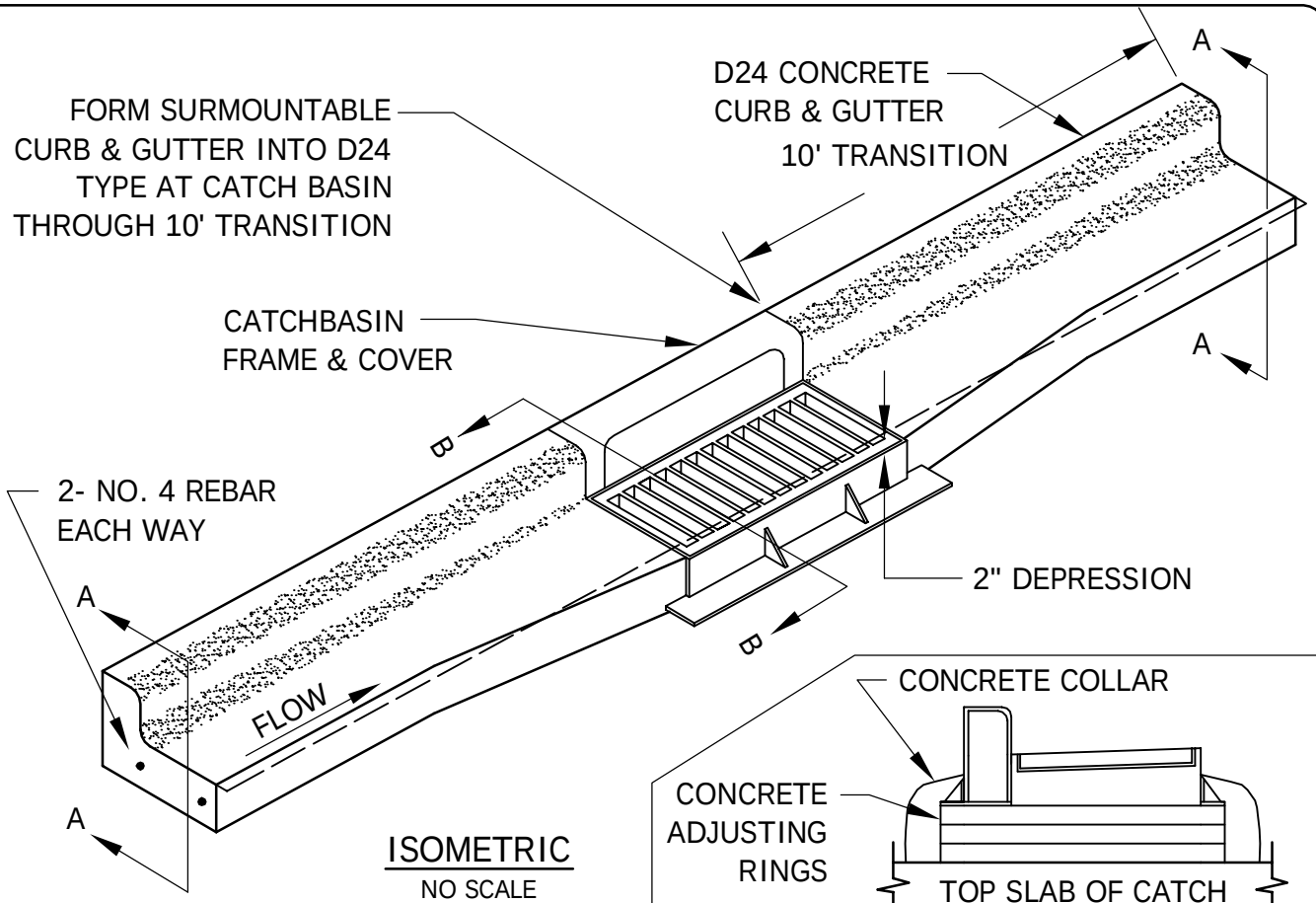
NOTES:

1. ALL EXPANSION AND CONSTRUCTION JOINTS SHALL BE TOOLED ALONG ENTIRE TOP AND FACE OF CURB AND GUTTER AND KNIFED THROUGH ENTIRE DEPTH.
2. FOR CURB & GUTTER IN AREAS OF PEDESTRIAN RAMP, SEE DETAIL PLATE RD-19.

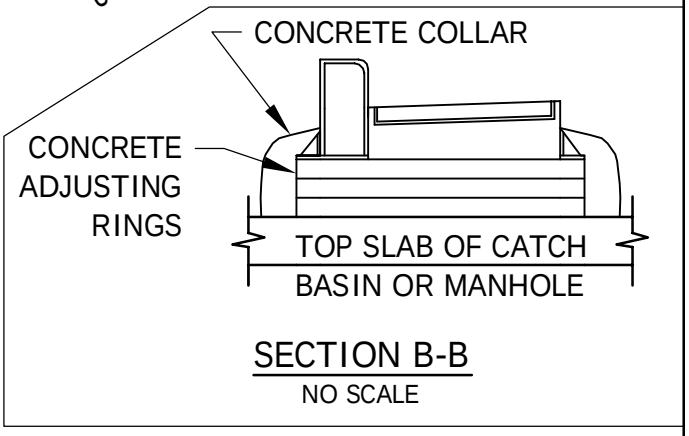
SURMOUNTABLE AND DRIVEWAY
CURB & GUTTER
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

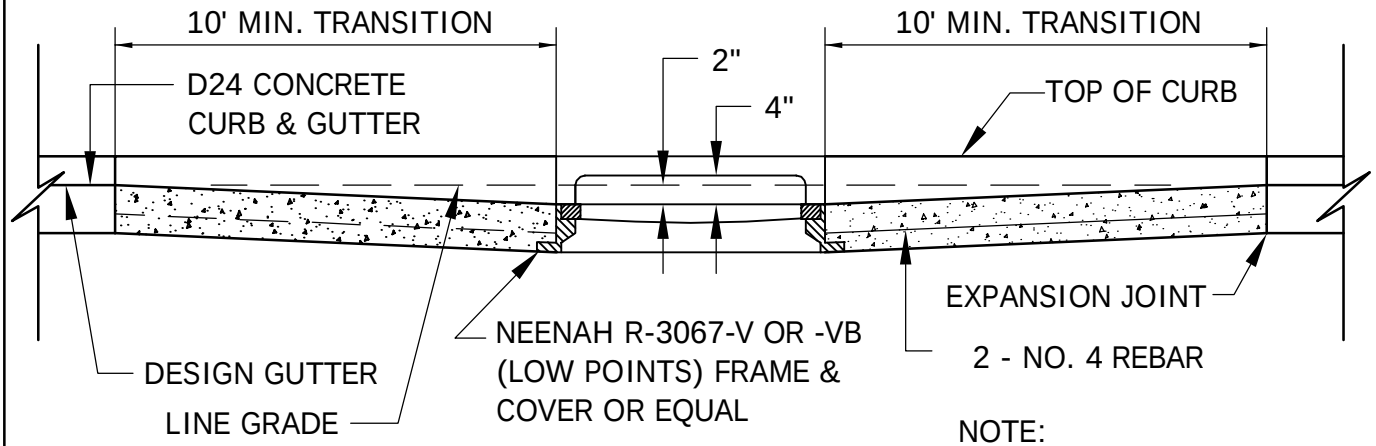
PLATE NO.
RD-14



ISOMETRIC
NO SCALE



SECTION B-B
NO SCALE



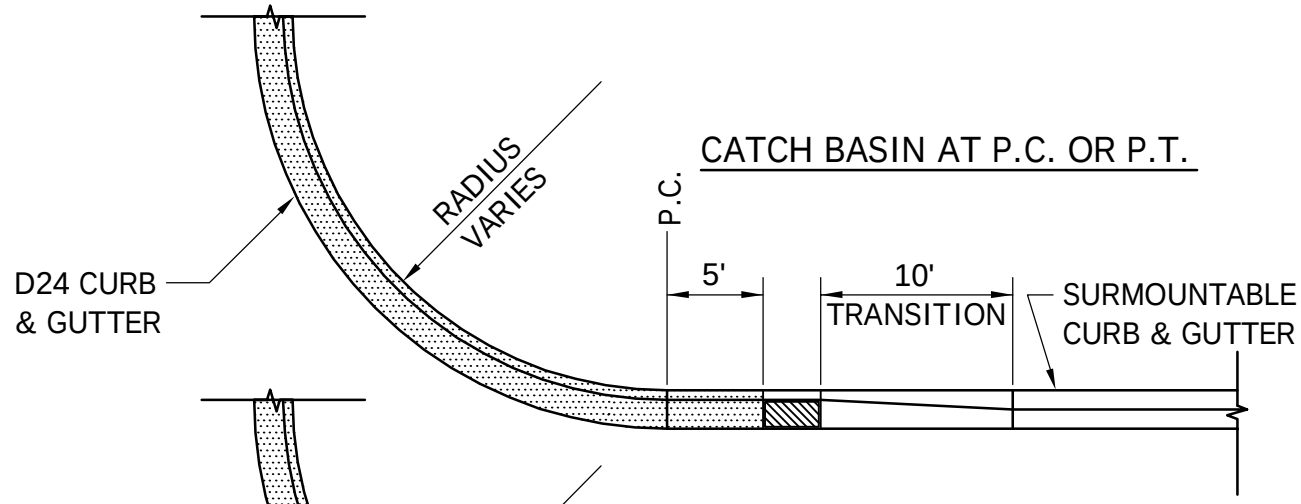
SECTION A-A
NO SCALE

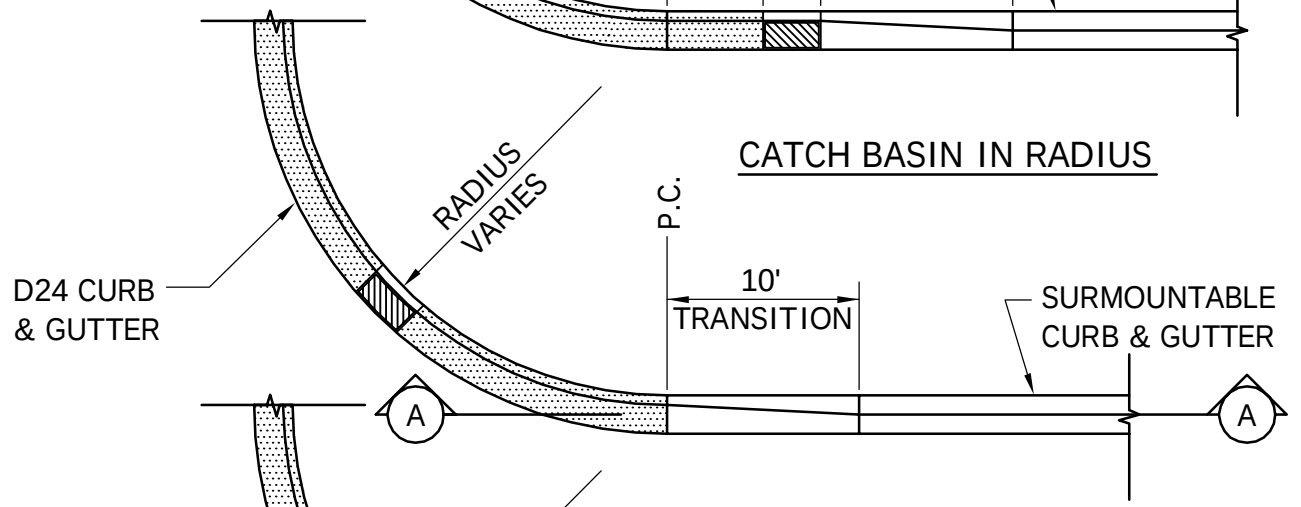
NOTE:
EXPANSION JOINTS 10' MIN. FROM CATCH BASINS

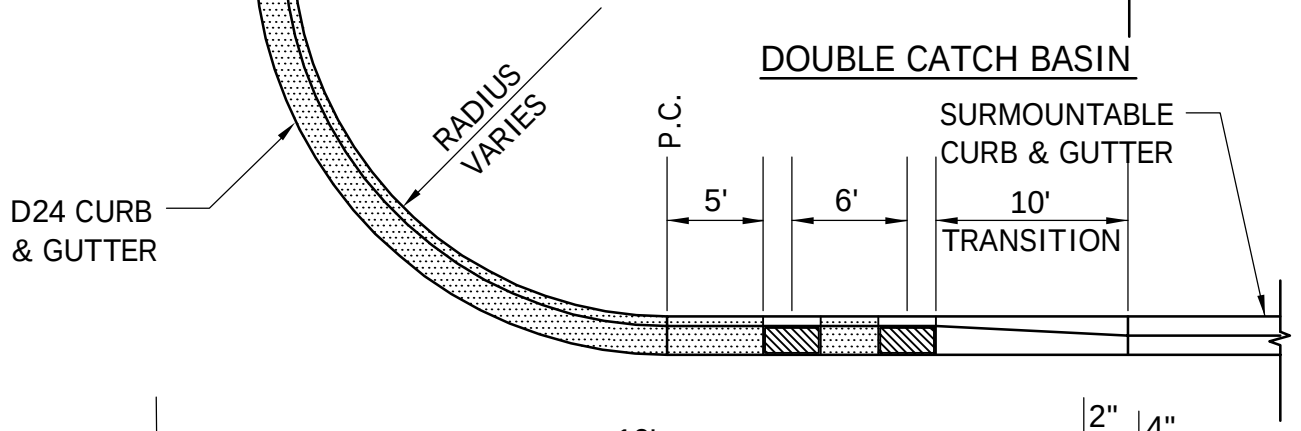
CURB & GUTTER CONSTRUCTION AT CATCH BASIN TOWN OF ST. JOSEPH WISCONSIN

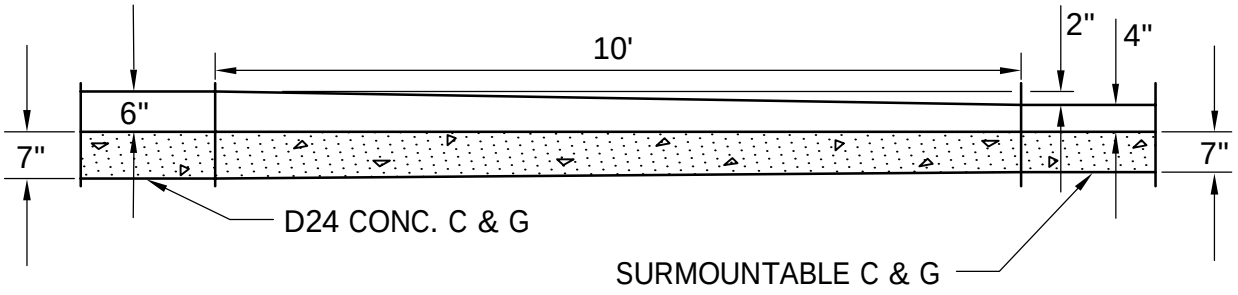
LAST REVISION:
AUG 2016

PLATE NO.
RD-15









SECTION A-A

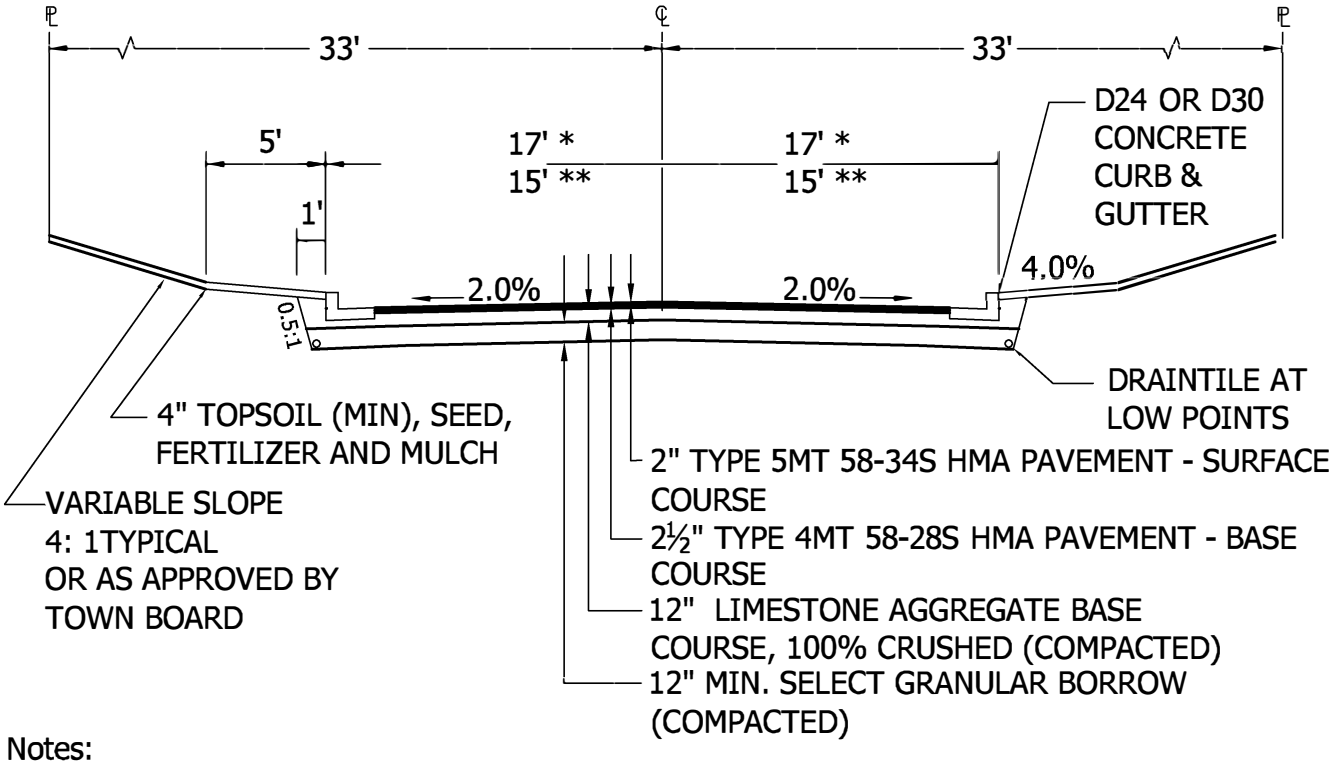
NOTE: ALL RADII "D" STYLE

CONCRETE CURB & GUTTER TRANSITION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-16

* - SUBCOLLECTOR ROAD
** - ACCESS ROAD



Notes:

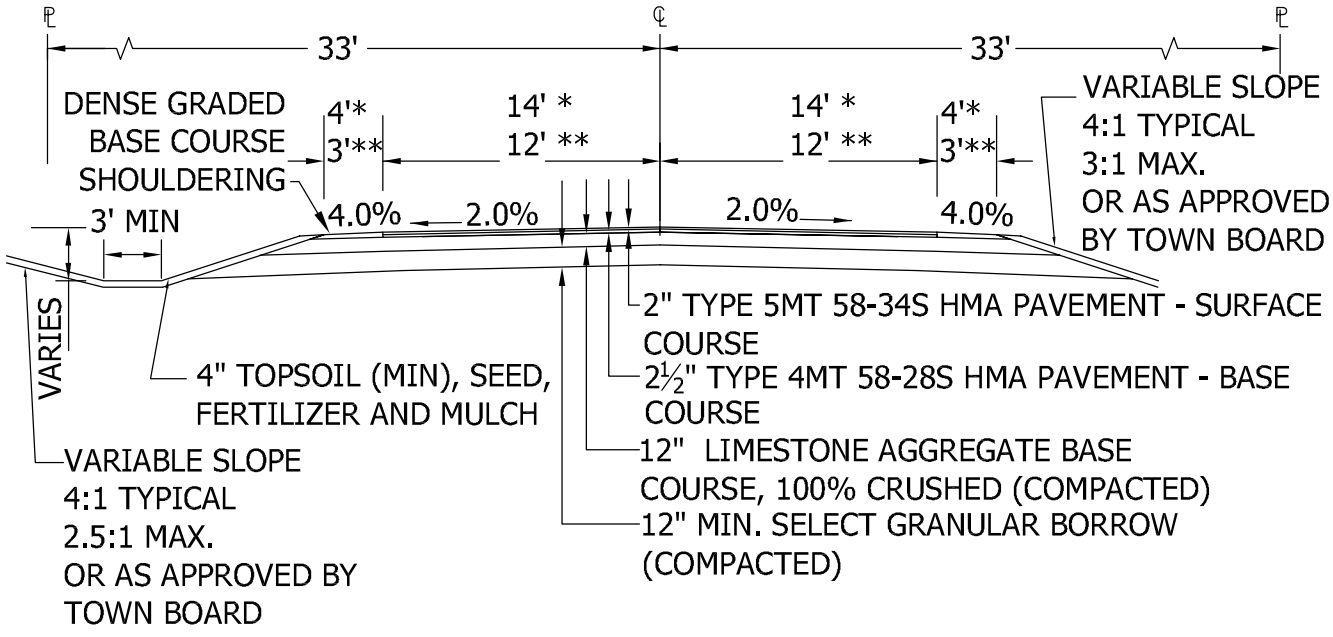
1. Decomposable material shall not be used in construction.
2. The typical section above is a minimum recommendation. Each commercial roadway section must be appropriately designed to accommodate anticipated traffic volumes and vehicle distributions. Design section is subject to review by the Town Engineer.
3. Tack coat to be applied between asphalt lifts.
4. Intersection angle of driveway to road or road to road shall not be less than 75°.
5. Storm sewer system must be designed for a 10-yr, 24-hr rainfall event. All storm sewer pipe must be Reinforced Concrete Pipe as specified. Perforated PVC draintile pipe is required 50' each way of all catch basins at low points.
6. Roadway slopes as they enter other roads are limited to 2% grade for the first 50 ft and are measured from the edge of pavement. Exceeding this restriction will require town board approval.
7. Roadway slopes shall not exceed 6% in grade, or as specified by the Town of St. Joseph.
8. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval.
9. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

COMMERCIAL URBAN ROAD
TYPICAL SECTION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
FEB 2021

PLATE NO.
RD-17

* - SUBCOLLECTOR ROAD
** - ACCESS ROAD



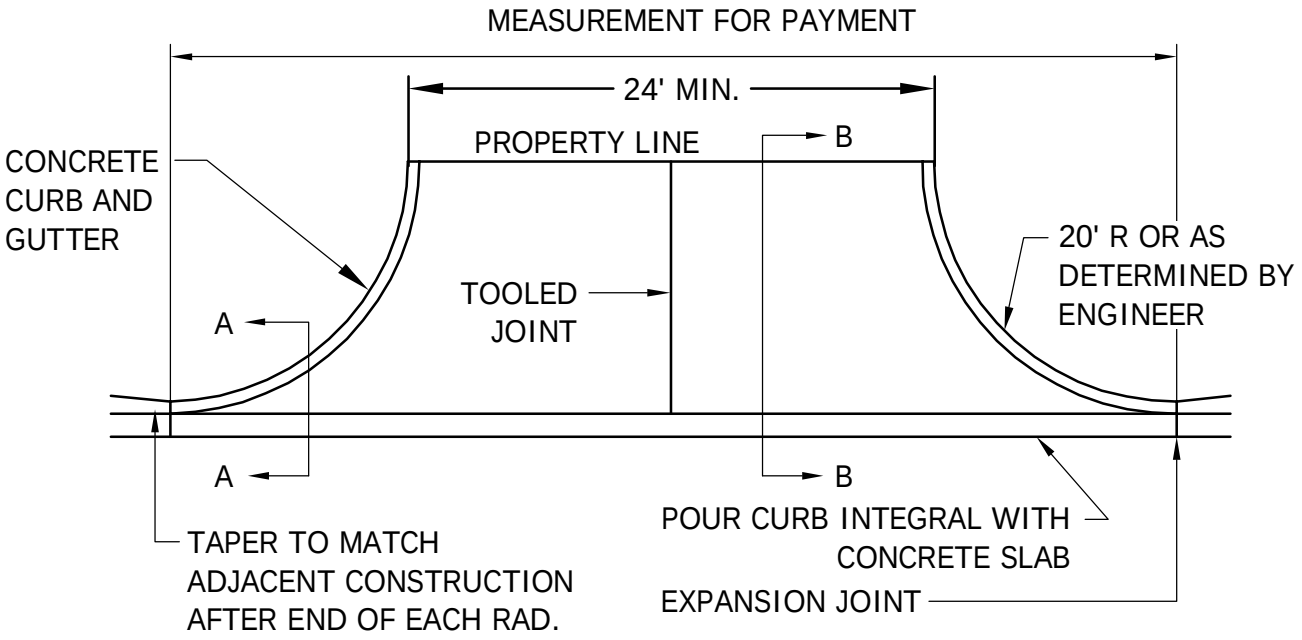
Notes:

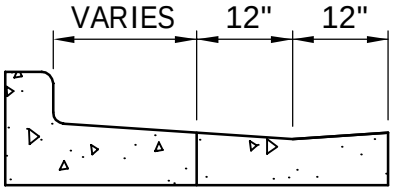
1. Decomposable material shall not be used in construction.
2. The typical section above is a minimum recommendation. Each commercial roadway section must be appropriately designed to accommodate anticipated traffic volumes and vehicle distributions. Design section is subject to review by the Town Engineer.
3. Tack coat to be applied between asphalt lifts.
4. Intersection angle of driveway to road or road to road shall not be less than 75°.
5. Roadway slopes as they enter other roads are limited to 2% grade for the first 50 ft and are measured from the edge of pavement. Exceeding this restriction will require town board approval.
6. Roadway slopes shall not exceed 6% in grade, or as specified by the Town of St. Joseph.
7. Suitable erosion control plans will be submitted to the town for review and approval with the preliminary and final plats. In addition, these plans will also be submitted to the St. Croix County Land and Conservation Division for their technical review and approval.
8. Various types of erosion control methods may be used but only with prior town board approval. The town prefers to control erosion with vegetation, barriers, and infiltration ponds.

COMMERCIAL RURAL ROAD TYPICAL SECTION TOWN OF ST. JOSEPH WISCONSIN

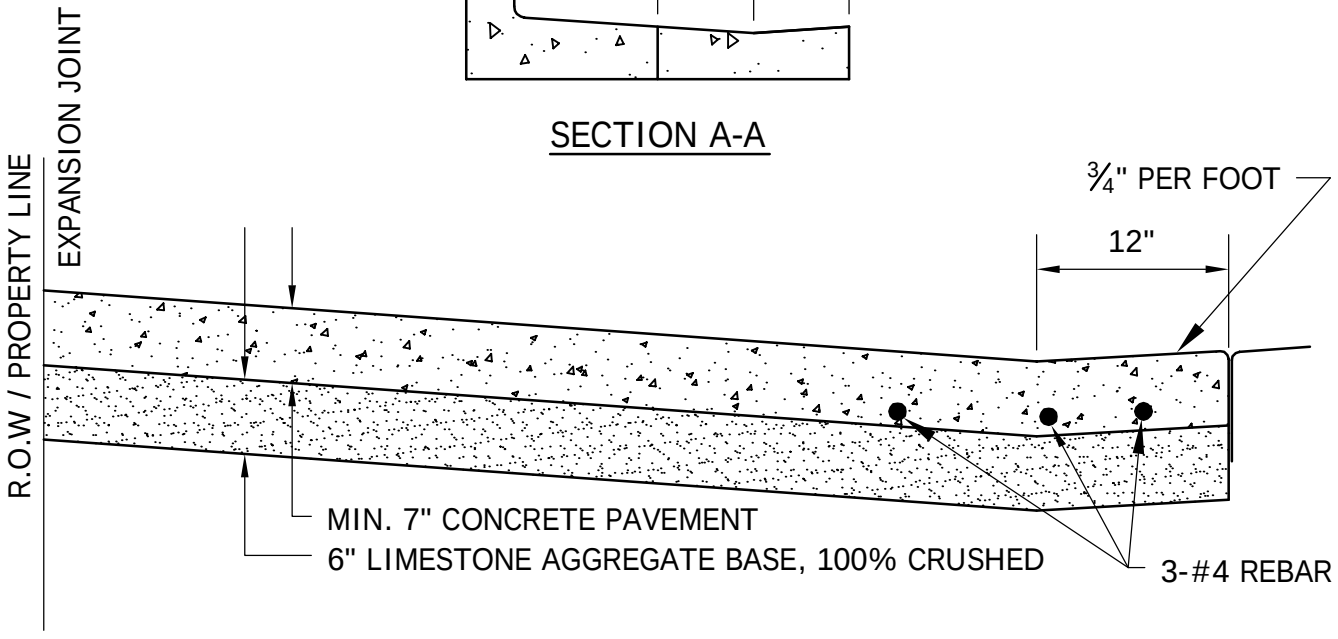
LAST REVISION:
FEB 2021

PLATE NO.
RD-18





SECTION A-A

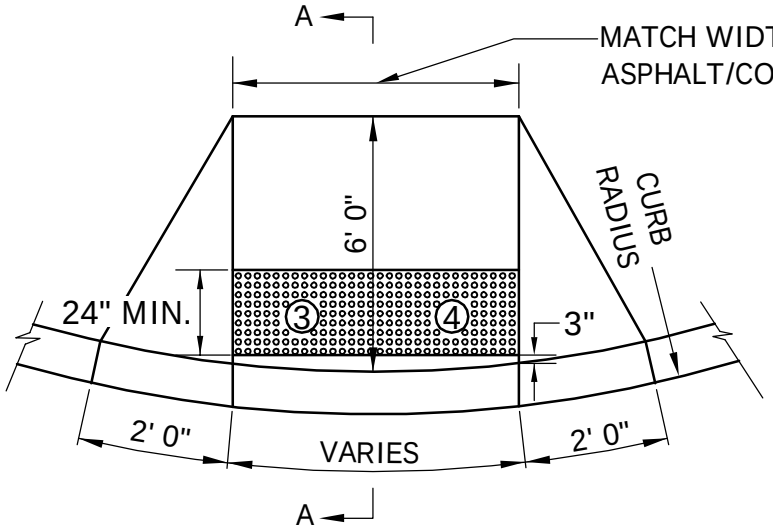


SECTION B-B
THRU CONCRETE APRON

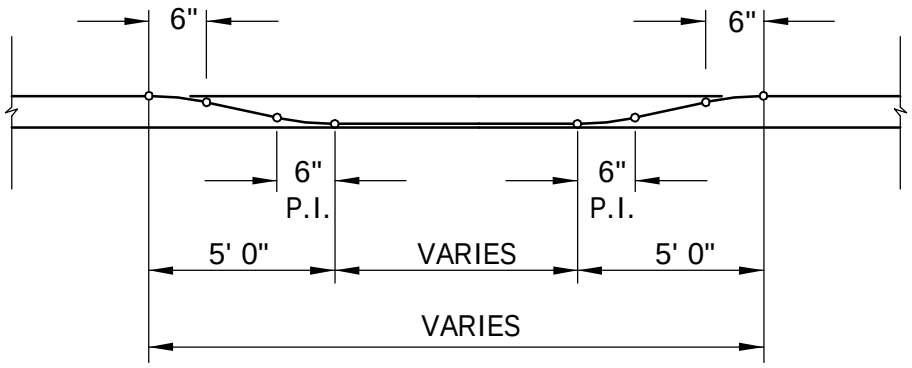
COMMERCIAL DRIVEWAY CONCRETE APRON
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
OCT 2016

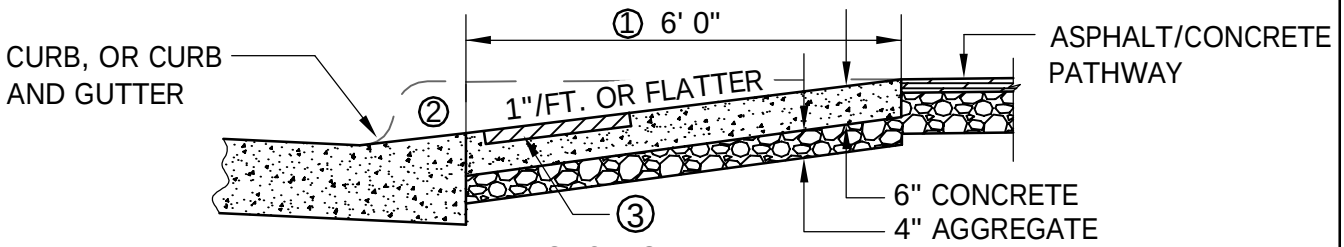
PLATE NO.
RD-19



PLAN VIEW OF RAMP



ELEVATION OF RAMP



SECTION A-A

NOTES:

THE CURB AND CURB TRANSITION ON THE RAMP WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. THE RAMP AREA WILL BE PAID FOR AS SQUARE FEET OF CONCRETE WALK.

① 6' 0" DIMENSION MAY BE INCREASED WHERE FEASIBLE TO PROVIDE A FLATTER SLOPE.

② THE 1"/FT. SLOPE SHALL BE CONSTRUCTED THROUGH THE CURB TO THE GUTTER WITH NO LIP AT THE GUTTER SECTION.

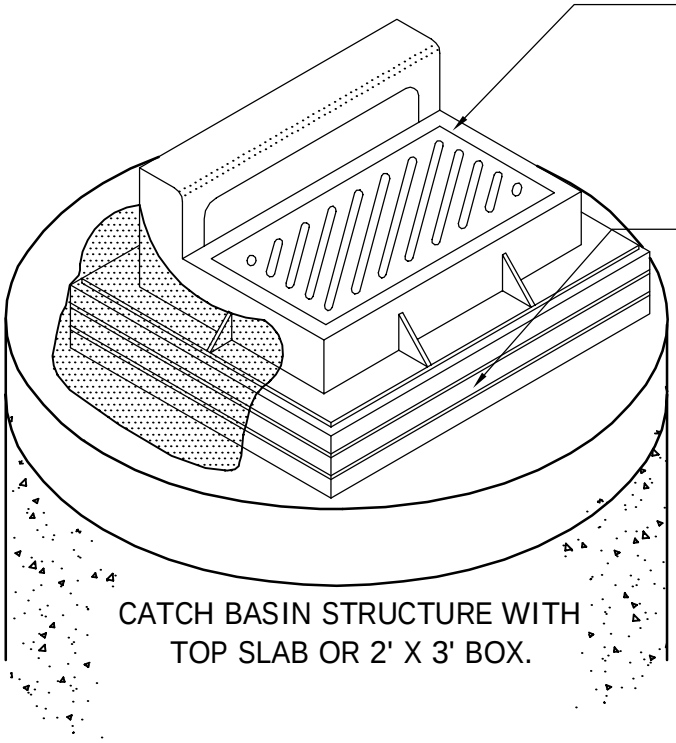
③ ADA REQUIRED TRUNCATED DOMES PER WISDOT STANDARD DETAIL DRAWINGS 8D5 AND WISDOT APPROVED PRODUCTS LIST.

④ TRUNCATED DOMES SHALL BE CAST IRON 'NATURAL FINISH'.

PEDESTRIAN RAMP
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

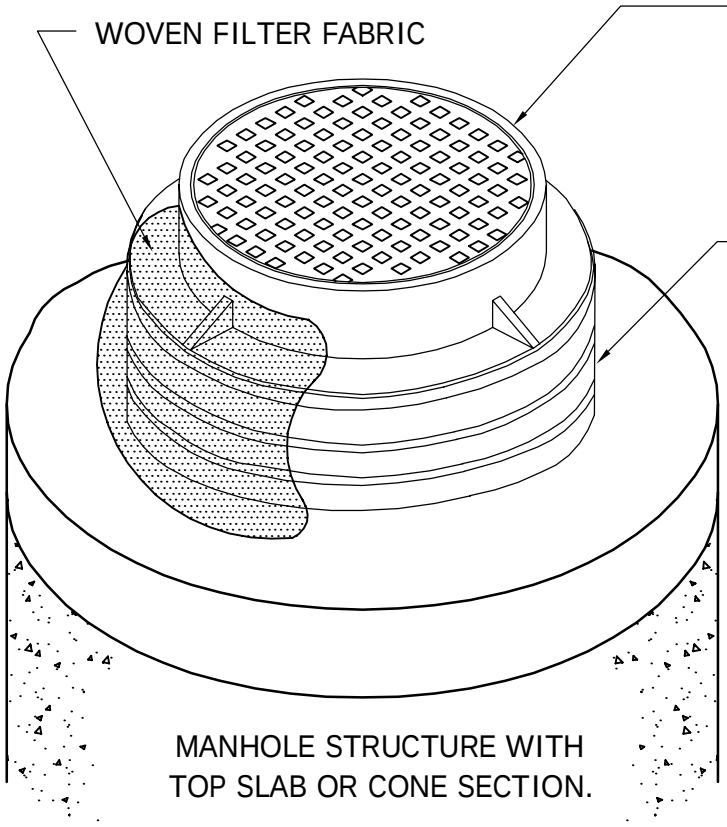
PLATE NO.
RD-20



NEENAH R3067-V OR -VB (LOW POINTS) CATCH BASIN FRAME AND GRATE. SHALL BE FURNISHED WITH CURB INLET BOX AND 3" DIA. FRONT FACE AND 4" MAXIMUM OPENING.

CONCRETE ADJUSTMENT RINGS. MIN. OF 2", MAX. OF 12" WITH A MIN. 3/8" MORTAR BETWEEN TOP SLAB AND FIRST RING. WOVEN FILTER FABRIC THEN SHALL BE WRAPPED AROUND ENTIRE SYSTEM AS SPECIFIED. CONCRETE COLLAR TO BE POURED AROUND ENTIRE HEIGHT OF ADJUSTMENT RINGS.

CATCH BASIN STRUCTURE WITH TOP SLAB OR 2' X 3' BOX.



WOVEN FILTER FABRIC

NEENAH R1642B MANHOLE FRAME AND COVER. SHALL BE FURNISHED WITH 2 CONCEALED PICK HOLES AND STAMPED "SANITARY SEWER" OR "STORM SEWER".

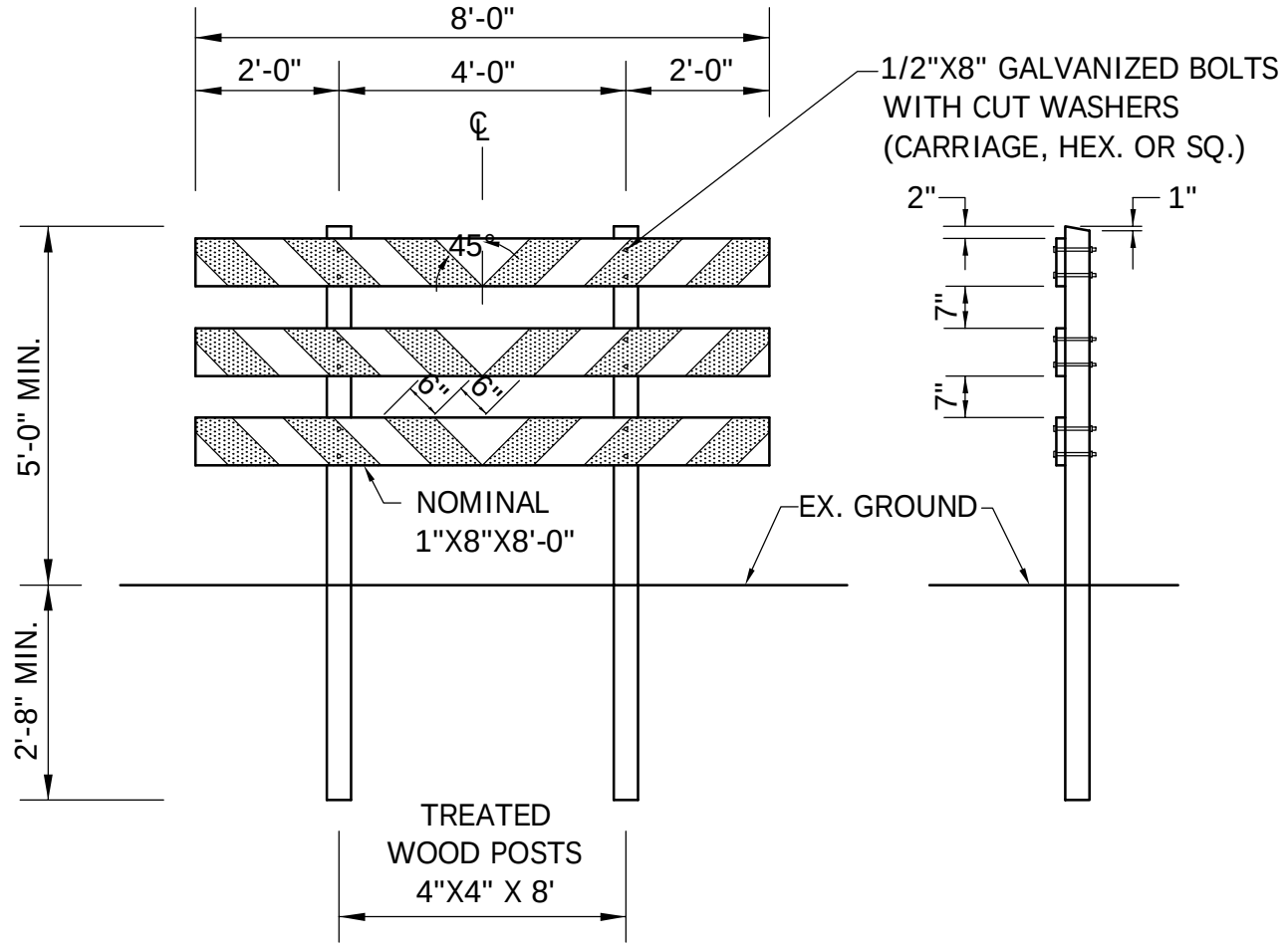
CONCRETE ADJUSTMENT RINGS. MIN. OF 2", MAX. OF 12" WITH A MIN. 3/8" MORTAR BETWEEN TOP SLAB AND FIRST RING. WOVEN FILTER FABRIC THEN SHALL BE WRAPPED AROUND ENTIRE SYSTEM AS SPECIFIED.

MANHOLE STRUCTURE WITH TOP SLAB OR CONE SECTION.

STRUCTURE CASTING ADJUSTMENT
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-21



NOTES:

THE BARRICADE BOARD FACE SURFACES SHALL BE FULLY REFLECTORIZED IN ALTERNATE SILVER-WHITE AND RED STRIPING, USING HIGH INTENSITY RETRO REFLECTIVE SHEETING CONFORMING TO THE REQUIREMENTS OF WISDOT SPEC. 637.2.2.2, TYPE H REFLECTIVE SHEETING.

PRIOR TO INSTALLING THE REFLECTIVE SHEETING, THE BARRICADE BOARDS SHALL BE GIVEN A COMPLETE COATING OF WHITE PAINT FOR WOOD (INTERMEDIATE COAT) CONFORMING TO WISDOT SPEC. 517.2.6, FOLLOWED BY A SECOND COAT OF WHITE PAINT FOR WOOD (FINISH COAT) CONFORMING TO WISDOT SPEC. 517.2.6 APPLIED ONLY TO THE SURFACES NOT COVERED WITH REFLECTIVE SHEETING.

THE BARRICADE BOARDS SHALL BE COMPLETELY PAINTED AND REFLECTORIZED SHEETING APPLIED BEFORE BEING INSTALLED ON THE POSTS.

THE PLACEMENT OF THE BARRICADE SHALL BE 10'-0" FROM THE END OF THE BITUMINOUS ROAD WITH THE BARRICADE CENTERED ON THE ROADWAY FACING THE FLOW OF TRAFFIC.

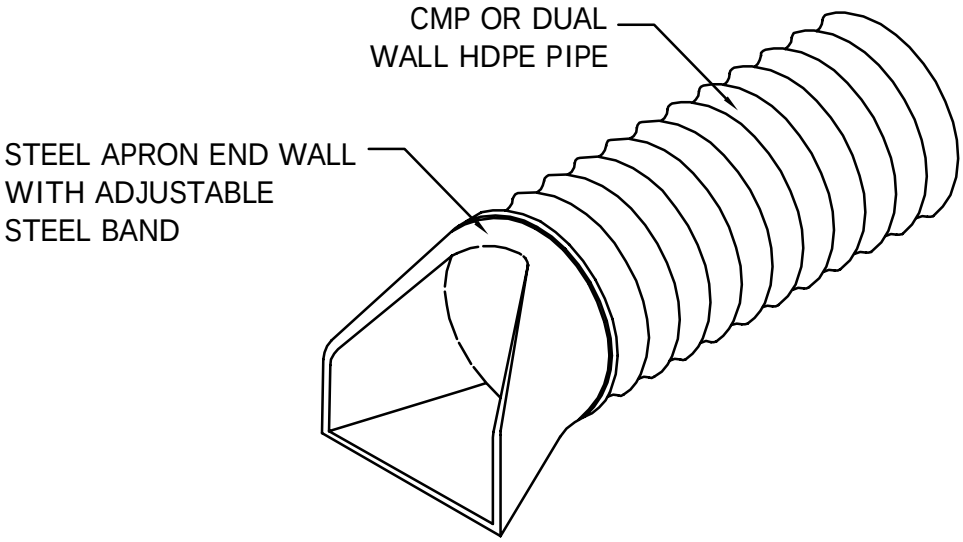
MULTIPLE BARRICADES MAY BE NECESSARY DEPENDING ON ROAD WIDTH.

PERMANENT BARRICADE
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
RD-22

REFER TO DETAIL STO-02 FOR RIP RAP PLACEMENT



Notes:

1. All culvert pipes shall be the following:
   a. Corrugated steel - minimum 16 GA - in conformance with AASHTO Specification M36.
      OR
   b. Dual wall HDPE in conformance with AASHTO Specification M294 Type S.

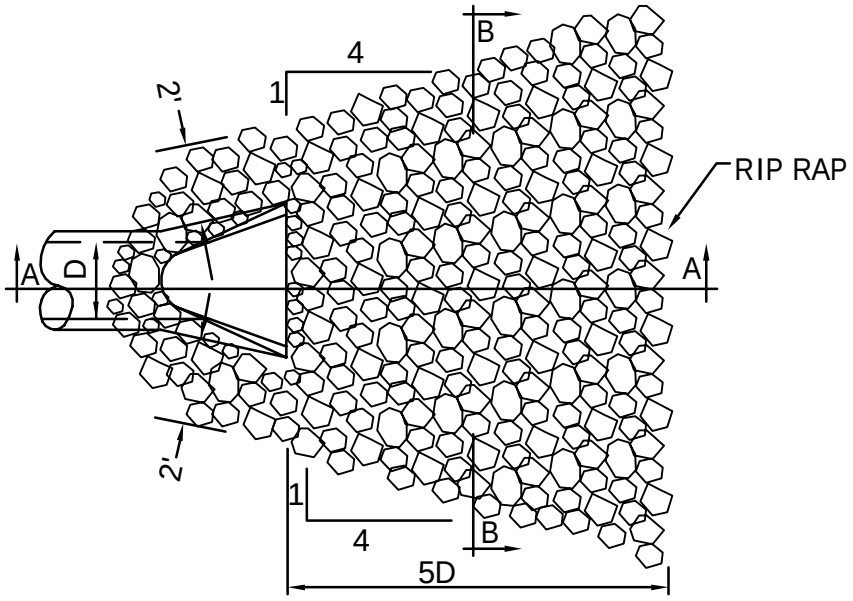
2. All culverts must be of adequate size to have the ability to withstand water from a 25 year rain event.

3. Steel apron end walls shall be used on all culverts where designated.

HDPE / CMP STORM SEWER PIPE
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
APRIL 2021

PLATE NO.
STO-01



PLAN

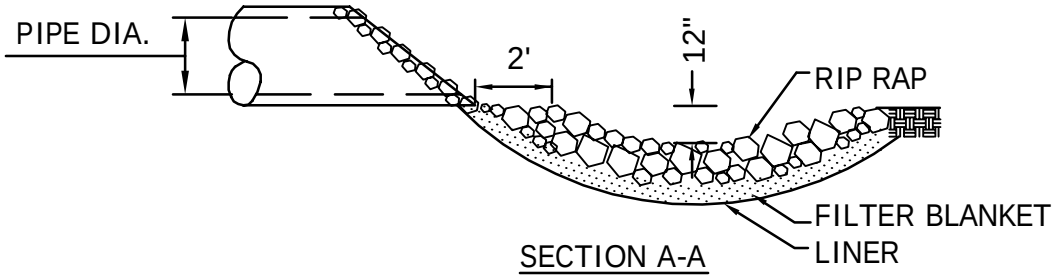
RIP RAP MINIMUM REQUIREMENTS

PIPE DIA.	
12" TO 18"	8 CY RIP RAP
24"	12 CY MED. RIP RAP
27"	14 CY MED. RIP RAP
30"	17 CY MED. RIP RAP
33"	20 CY MED. RIP RAP

RIP RAP MINIMUM REQUIREMENTS

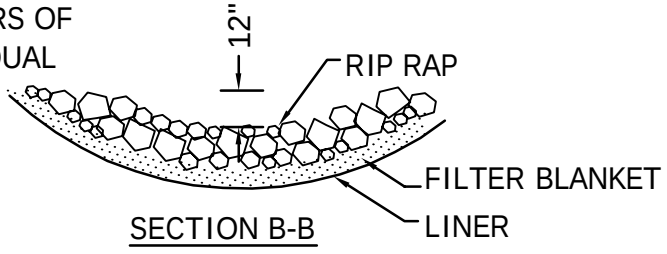
PIPE DIA.	
36"	23 CY MED. RIP RAP
42"	31 CY MED. RIP RAP
48"	38 CY MED. RIP RAP
54" AND UP	62 CY and up HEAVY RIP RAP

(One cubic yard is approximately 2,800 lbs.)



SECTION A-A

NOTE FILTER BLANKET REQUIRED UNDER RIP RAP OR 2 LAYERS OF 500X MIRAFI FABRIC OR EQUAL

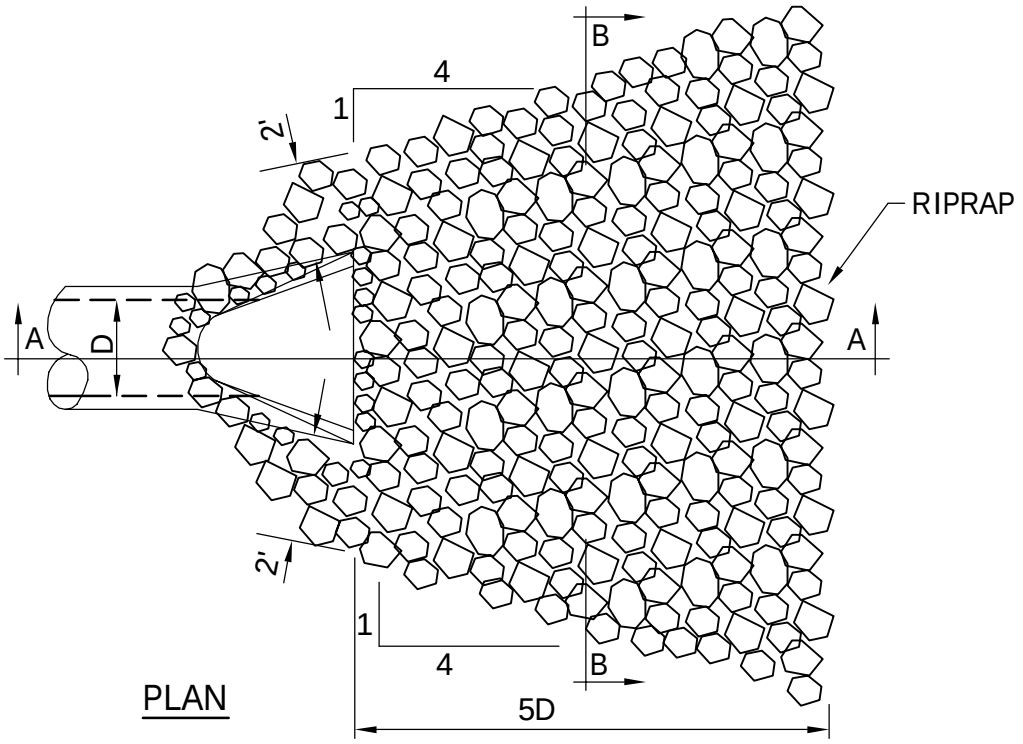


SECTION B-B

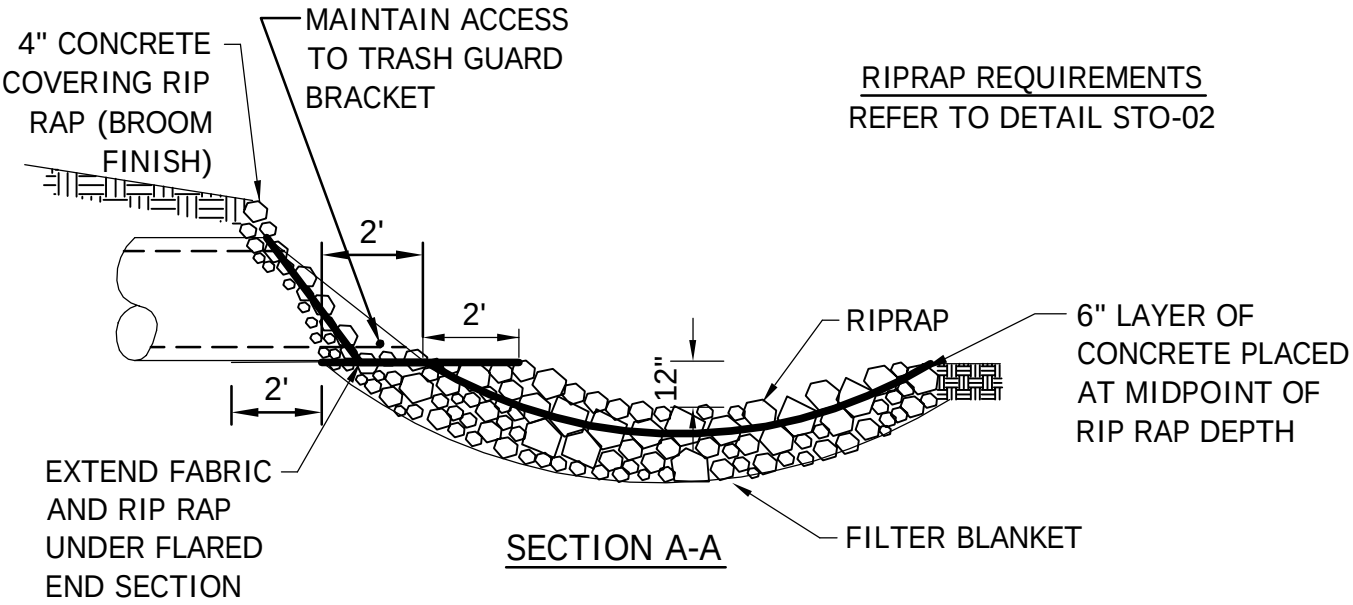
RIP RAP AT OUTLETS
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-02

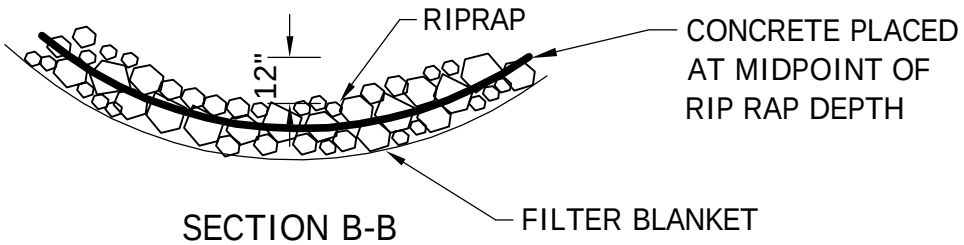


PLAN



SECTION A-A

RIPRAP REQUIREMENTS
REFER TO DETAIL STO-02

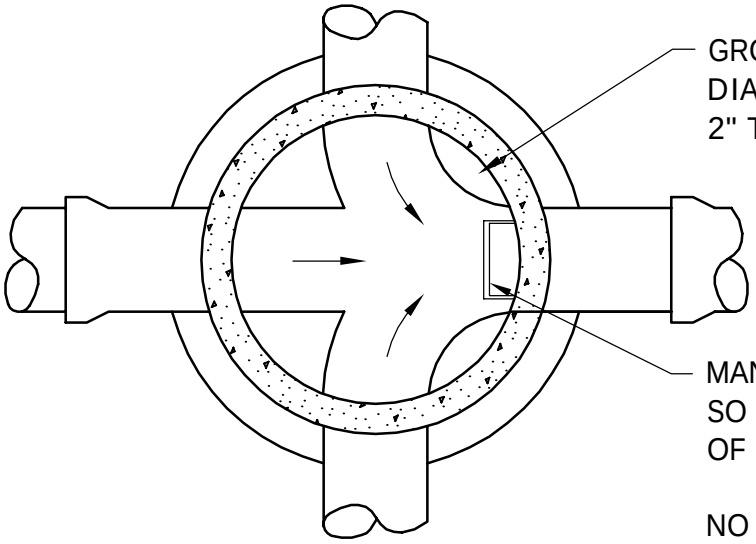


SECTION B-B

GROUTED RIP RAP AT OUTLETS
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-02A

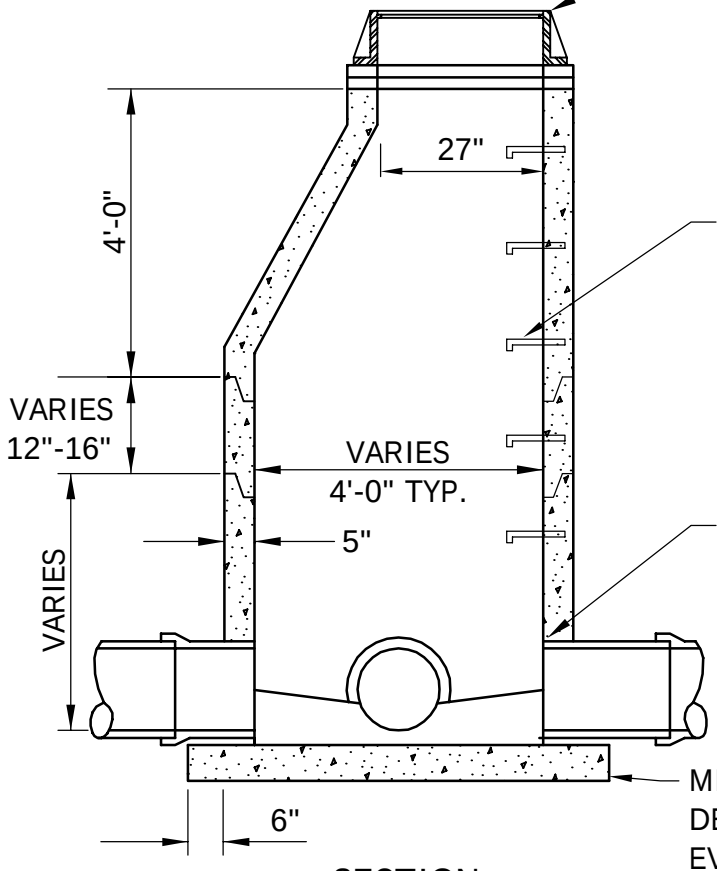


GROUT BOTTOM OF MANHOLE TO 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM.

NO BLOCK STRUCTURES ARE ALLOWED.

PLAN



NEENAH R-1642B CASTING OR EQUAL WITH CONCRETE ADJUSTMENT RINGS

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER.

ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL.

DOGHOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE.

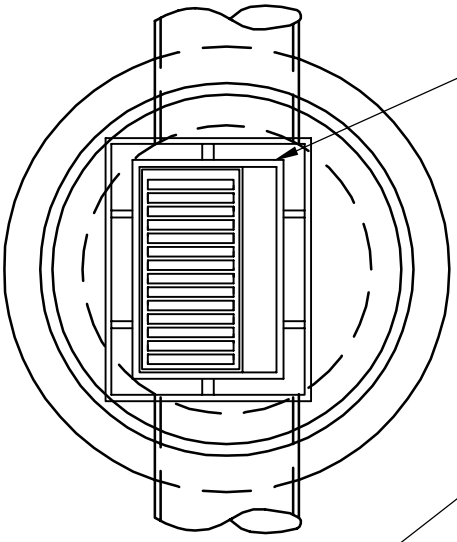
MINIMUM SLAB THICHNESS IS 6" FOR 14' DEPTH. INCREASE THICKNESS 1" FOR EVERY 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6" X 6" 10/10 MESH.

SECTION

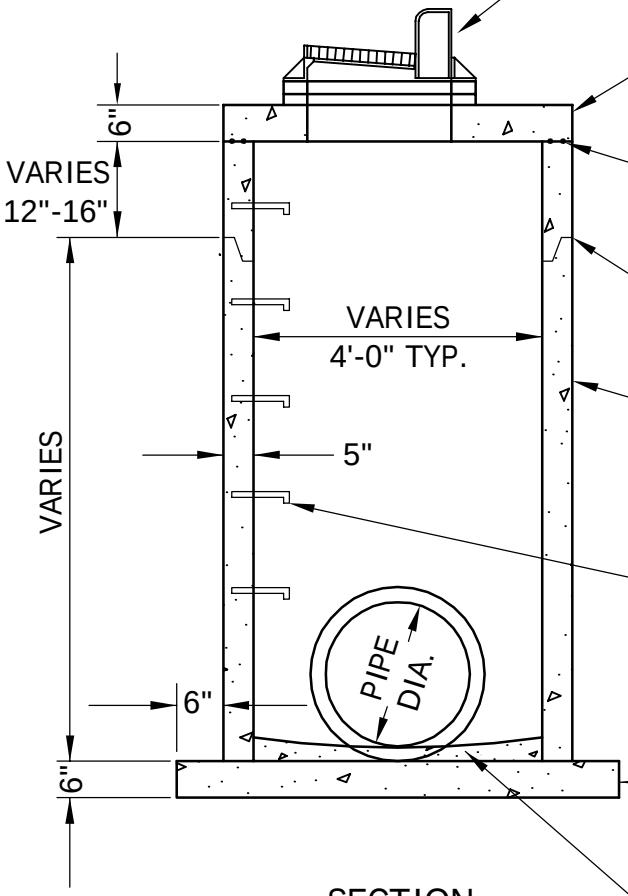
STORM SEWER MANHOLE
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-03



PLAN



SECTION

24"X36" SLAB OPENING FOR CASTING AS SPECIFIED.

DIMENSION FROM BACK OF CURB TO CENTER OF PIPE.
4' DIA. MH - 9" IN FROM BACK OF CURB
5' DIA. MH - 3" IN FROM BACK OF CURB
6' DIA. MH - 3" BEHIND BACK OF CURB
7' DIA. MH - 9" BEHIND BACK OF CURB
8' DIA. MH - 15" BEHIND BACK OF CURB

NEENAH R3067-V OR -VB (LOW POINTS) CASTING OR EQUAL WITH 3" RADIUS CURB BOX AND CONCRETE ADJUSTMENT RINGS

6" PRECAST REINFORCED CONCRETE SLAB. FOR 6' DIA. MANHOLE, AN 8" PRECAST SLAB IS REQUIRED.

TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR EQUAL.

ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

PRECAST CONCRETE SECTION

DOGHOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND INSIDE.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" O.C.

NO BLOCK STRUCTURES ARE ALLOWED.

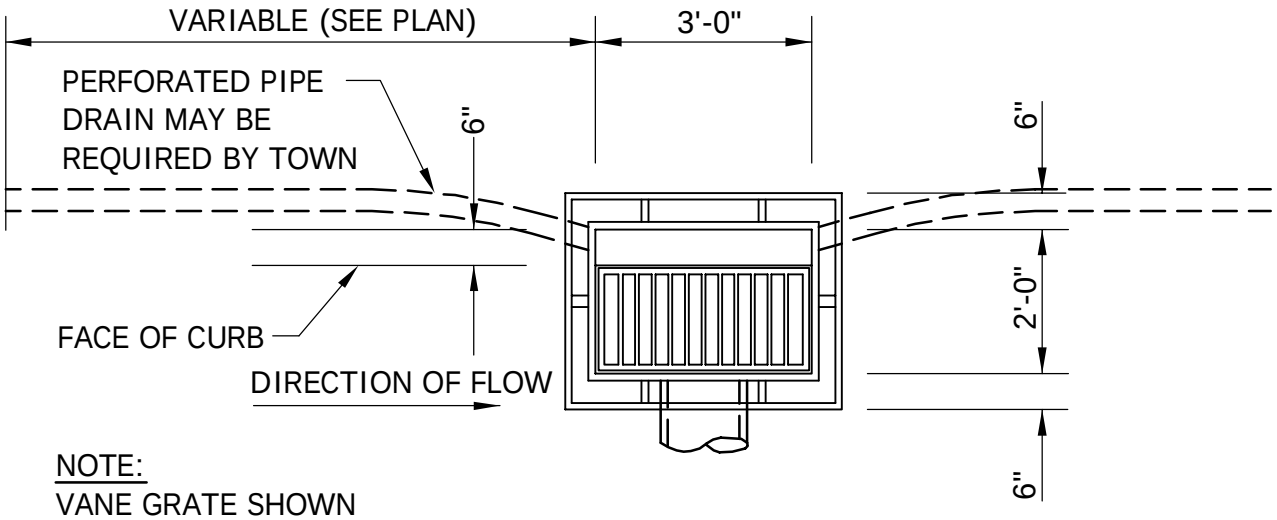
MINIMUM SLAB THICKNESS, 6" FOR 14' DEPTH. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.

GROUT BOTTOM

CATCH BASIN MANHOLE
TOWN OF ST. JOSEPH
WISCONSIN

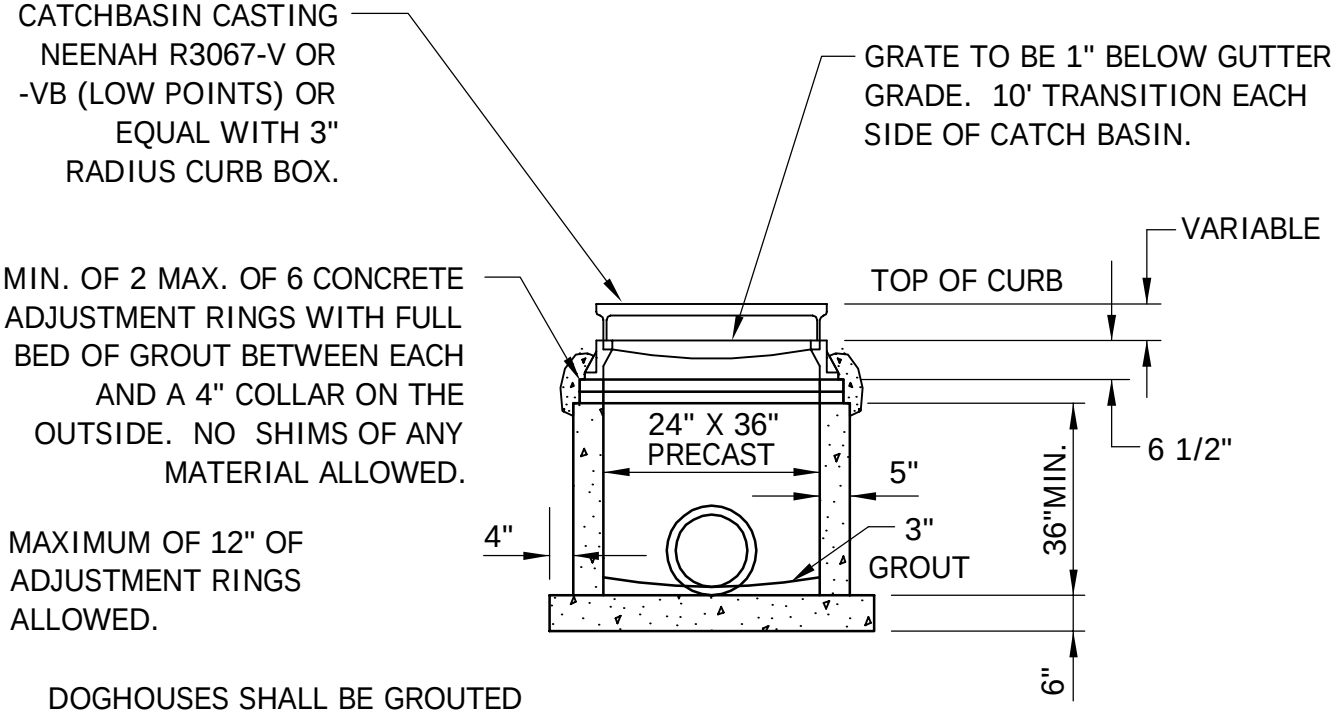
LAST REVISION:
AUG 2016

PLATE NO.
STO-04



NOTE:
VANE GRATE SHOWN

PLAN

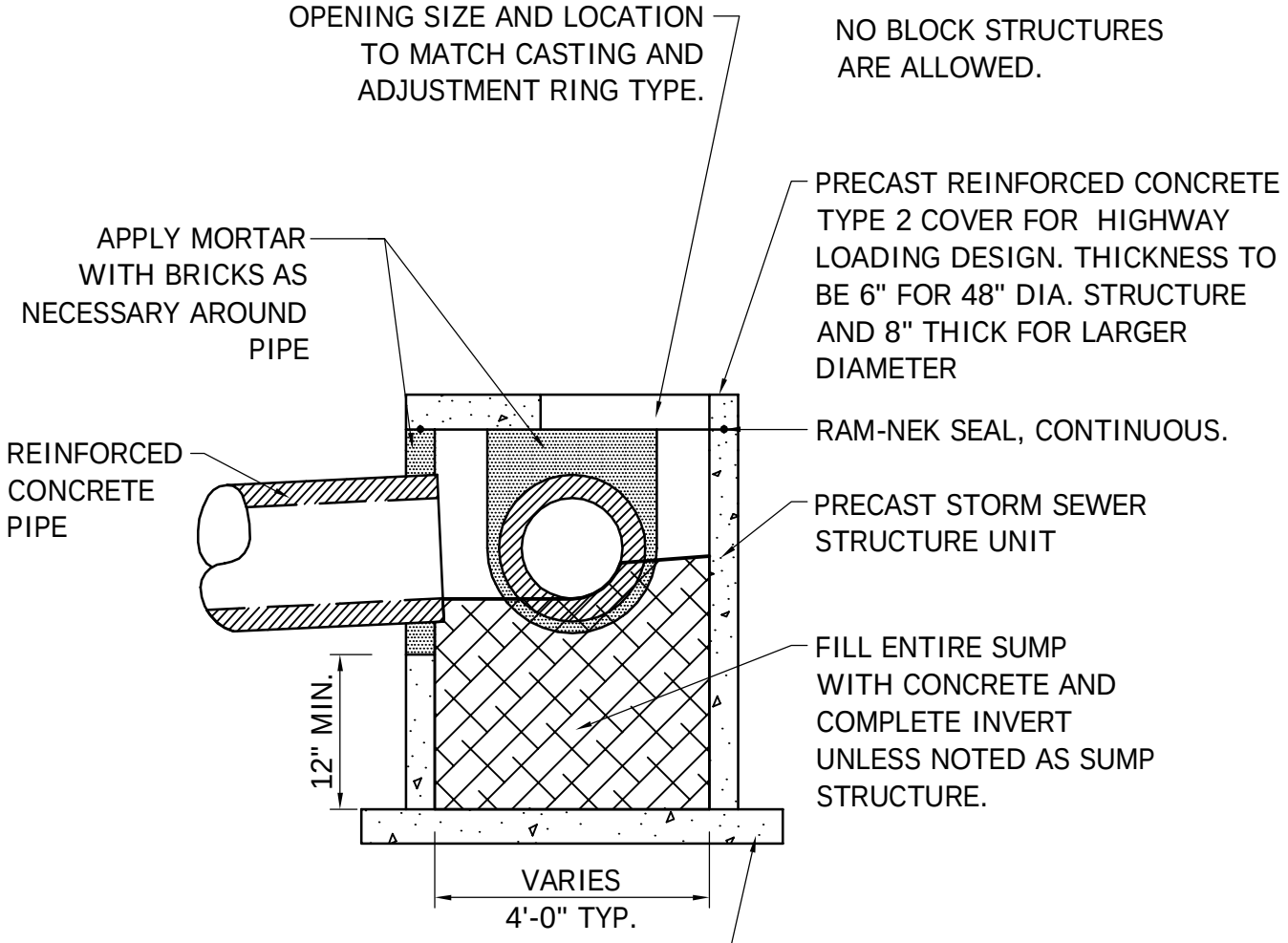


SECTION

CATCH BASIN
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

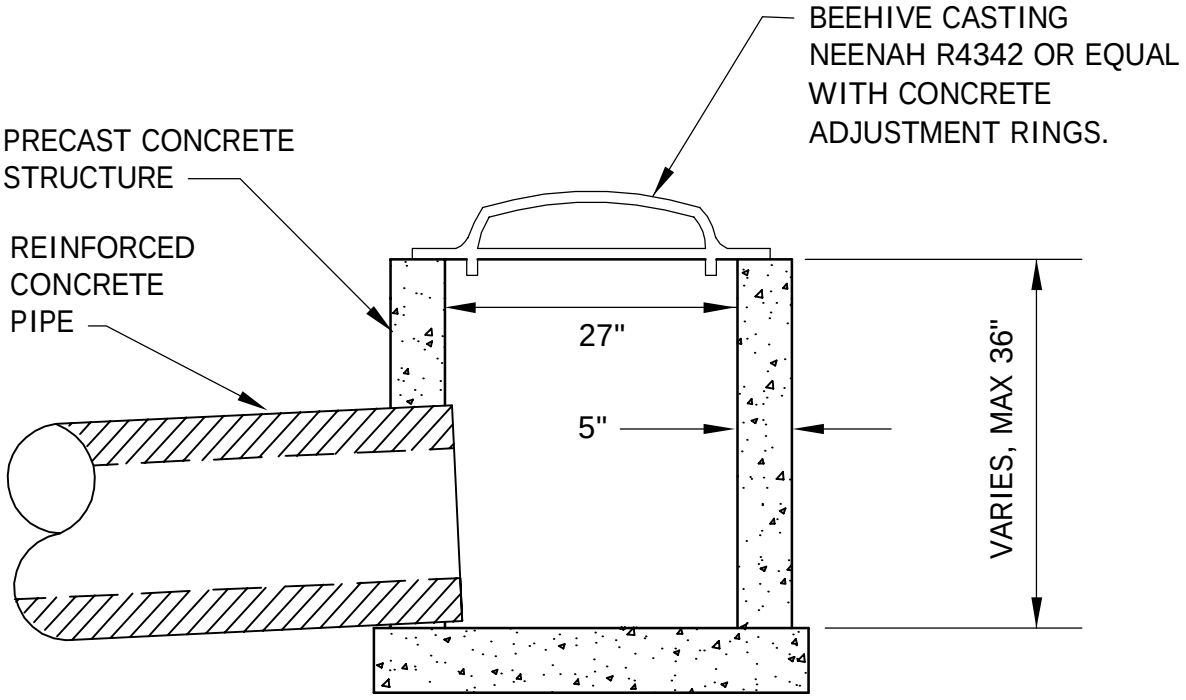
PLATE NO.
STO-05



PRECAST SHALLOW STORM SEWER STRUCTURE TOWN OF ST. JOSEPH WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-06



DOGHOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND THE INSIDE.

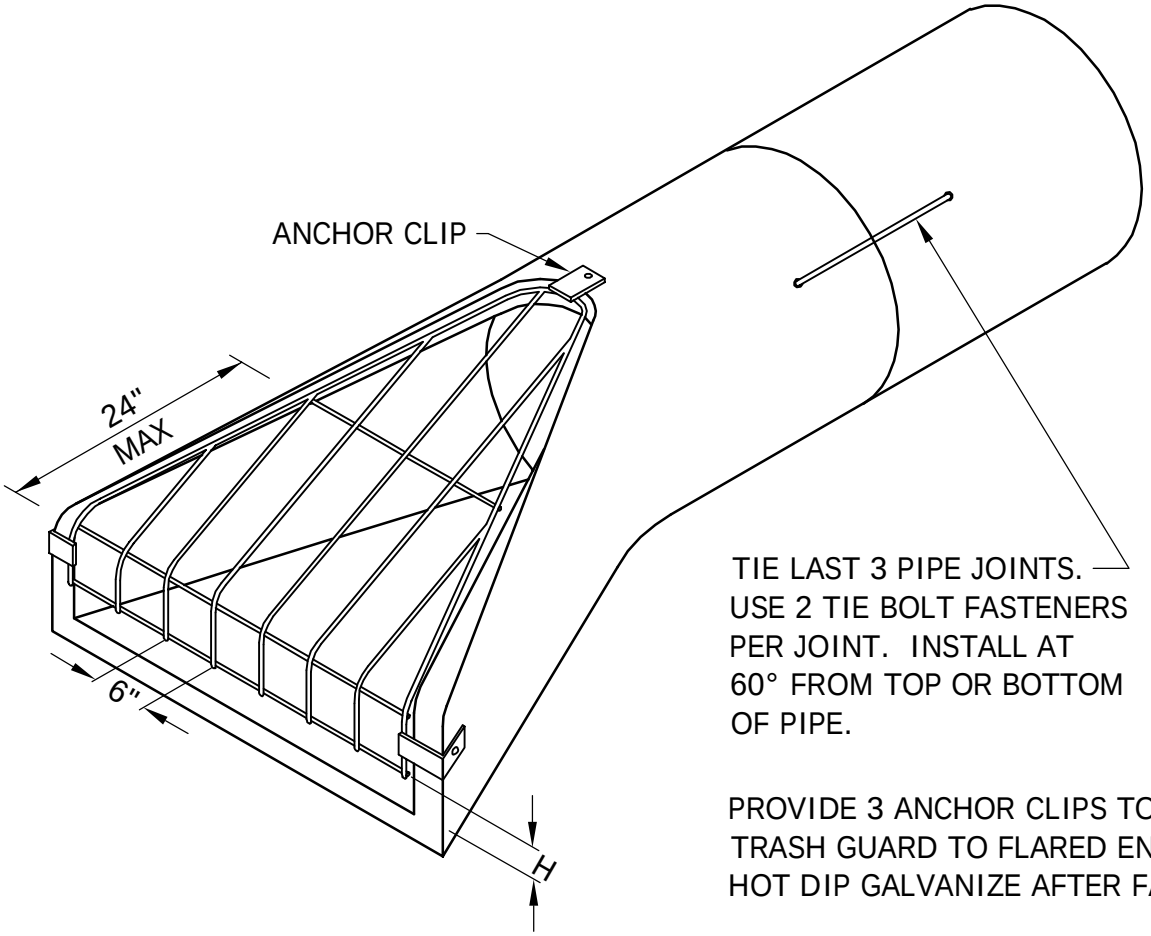
40" DIA. x 5" THICK PRECAST REINFORCED CONCRETE BASE SLAB.

PRECAST 27" SHALLOW DEPTH CATCH BASIN TOWN OF ST. JOSEPH WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-07

REFER TO DETAIL STO-02 FOR RIPRAP PLACEMENT.



TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT. INSTALL AT 60° FROM TOP OR BOTTOM OF PIPE.

PROVIDE 3 ANCHOR CLIPS TO FASTEN TRASH GUARD TO FLARED END SECTION. HOT DIP GALVANIZE AFTER FABRICATION.

ANCHOR BOTH SIDES.

ISOMETRIC

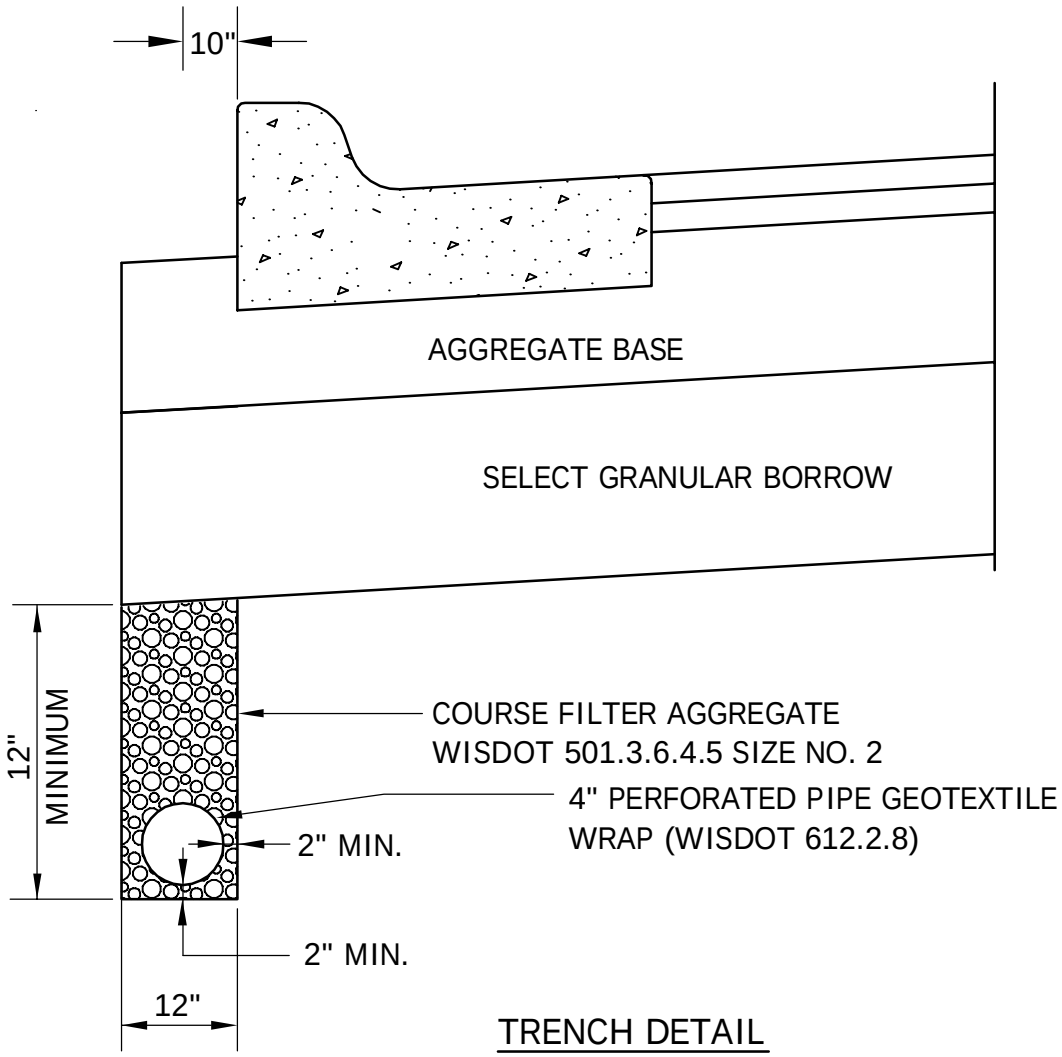
TRASH GUARD SIZING

PIPE SIZE	BARS	H	BOLTS
12"-18"	3/4"ø	4"	5/8"
21"-42"	1"ø	6"	3/4"
48"-72"	1 1/4"ø	12"	1"

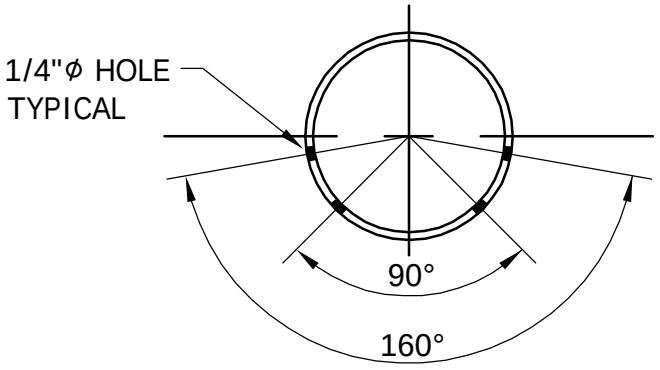
FLARED END SECTION AND TRASH GUARD
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-08



TRENCH DETAIL

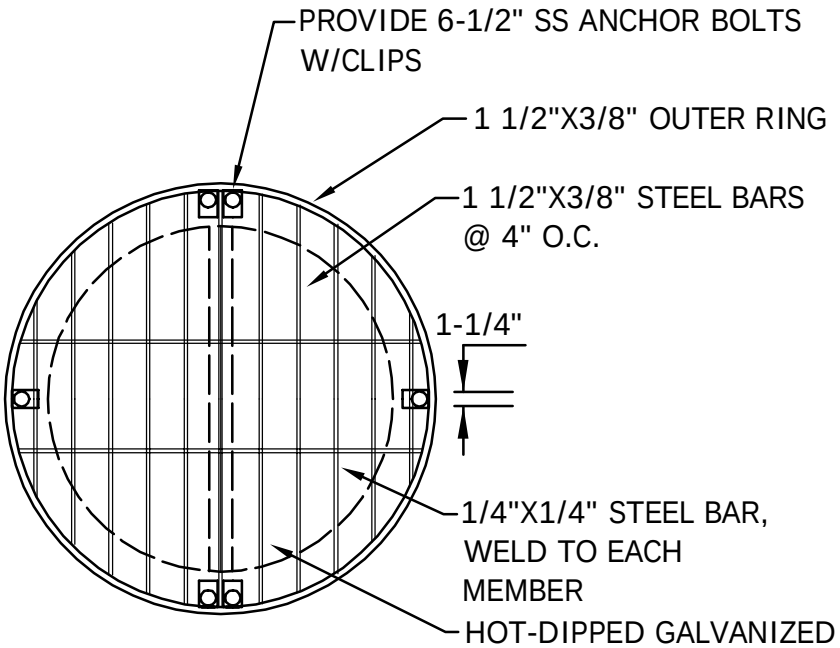


PIPE DETAIL

PVC PERFORATED PIPE
BELOW CONCRETE CURB
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

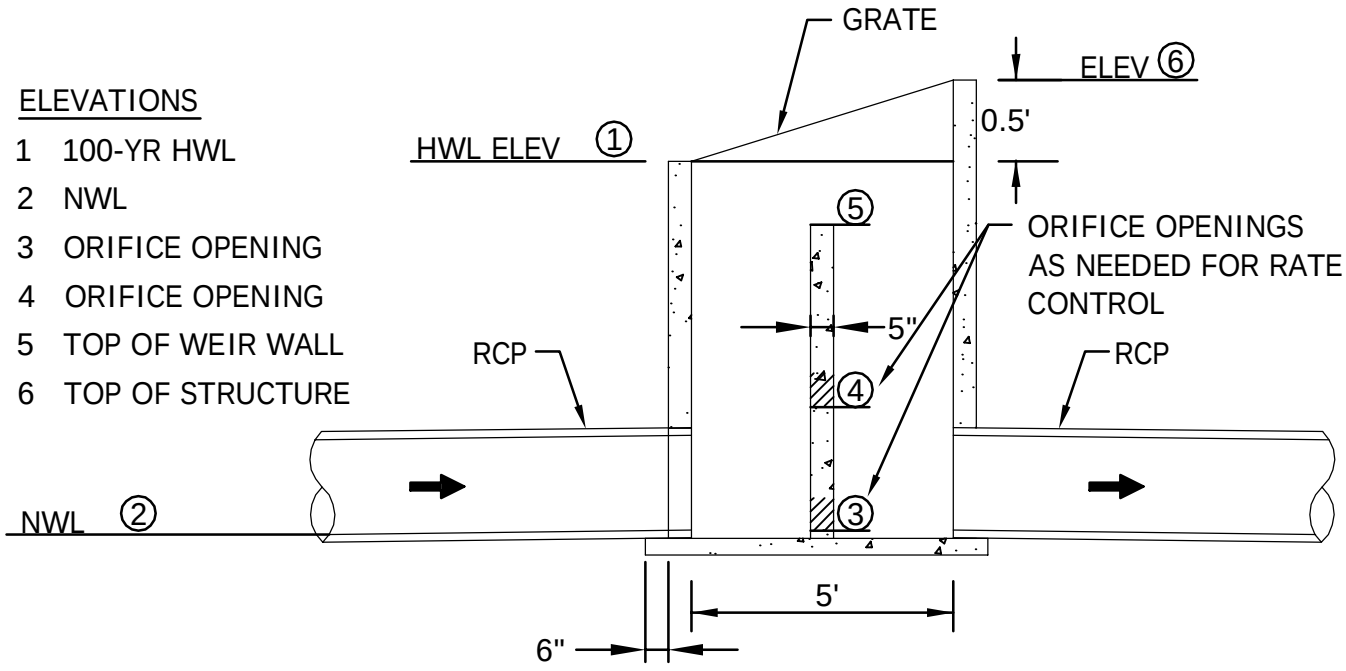
PLATE NO.
STO-09



GRATE DETAIL

ELEVATIONS

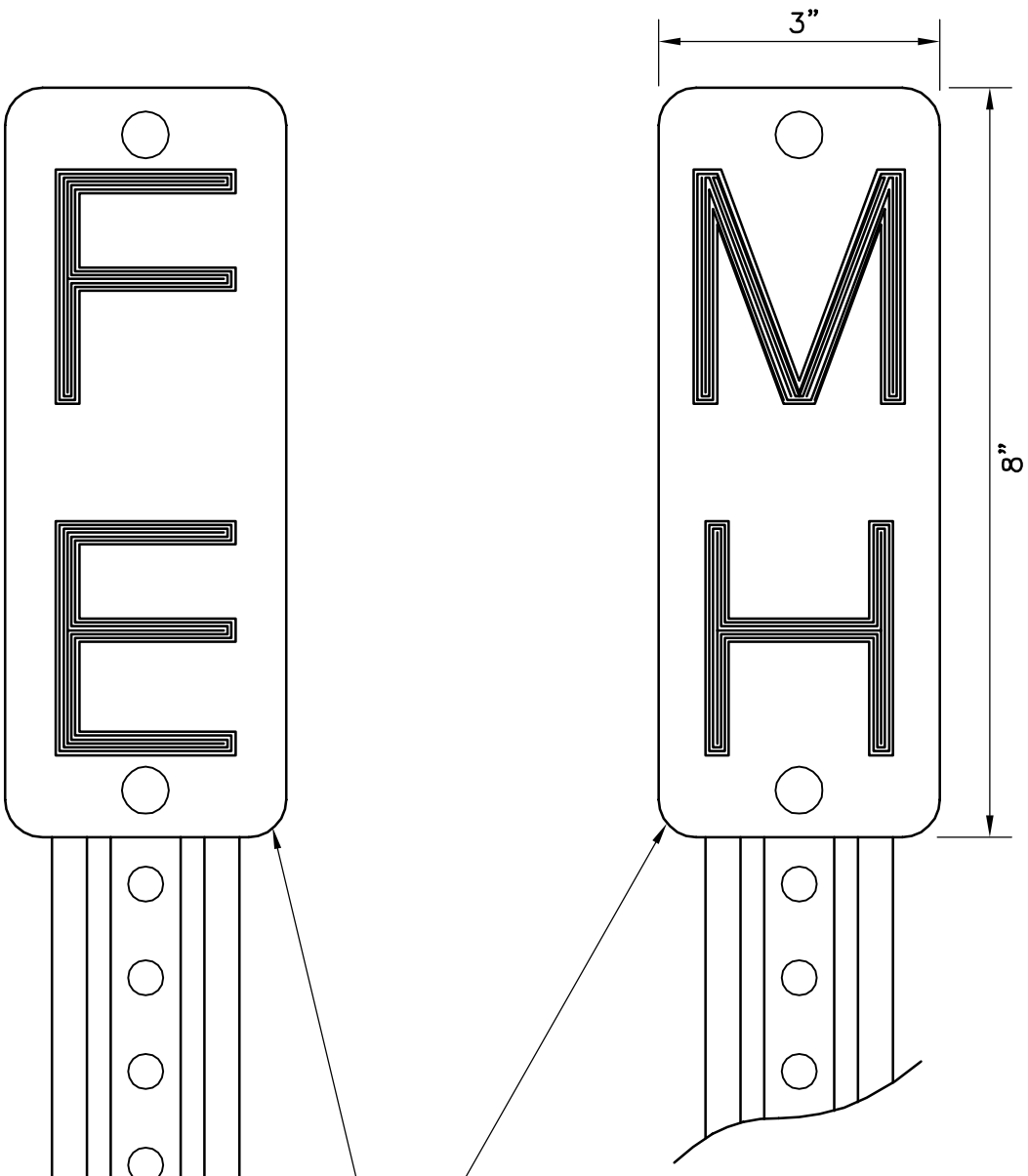
1 100-YR HWL
2 NWL
3 ORIFICE OPENING
4 ORIFICE OPENING
5 TOP OF WEIR WALL
6 TOP OF STRUCTURE



POND OUTLET STRUCTURE
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
STO-10



0.063" Thick aluminum sign. White letters on green high intensity reflectorized background.

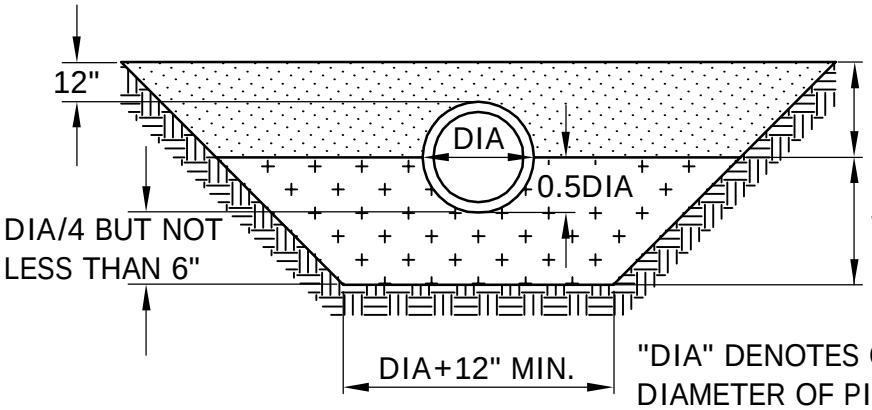
0.063" Thick aluminum sign. Black letters on white high intensity reflectorized background.

U–Channel post, Minimum 3 LB./FT. 6'–6" long, painted green.

STRUCTURE MARKER POST
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

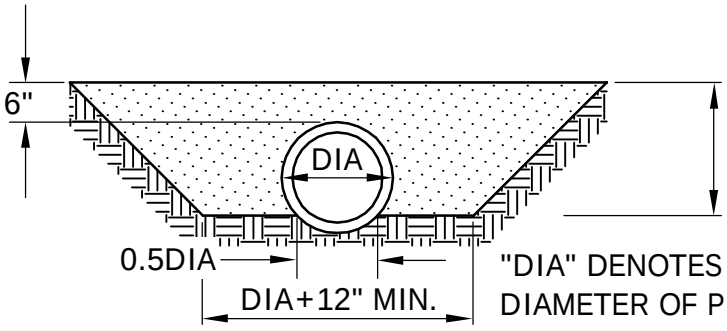
PLATE NO.
STO-11



LOAD FACTOR 1.9

CLASS B

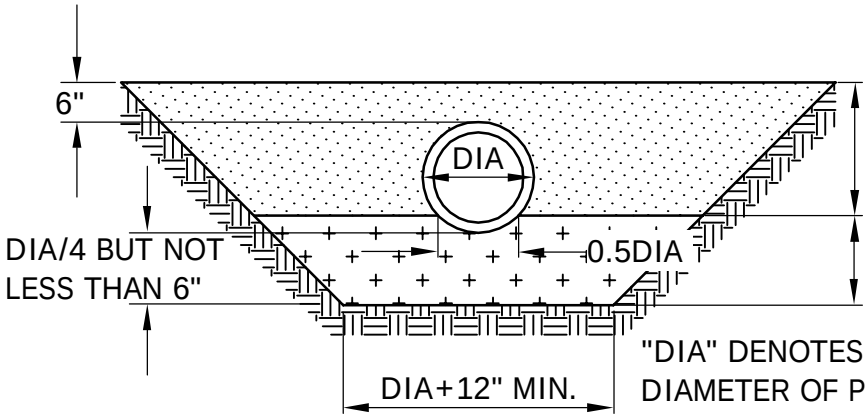
HAND SHAPED FROM
ANGULAR BEDDING MATERIAL



LOAD FACTOR 1.5

CLASS C-1

HAND SHAPED FROM FIRM
UNDISTURBED SOIL



LOAD FACTOR 1.5

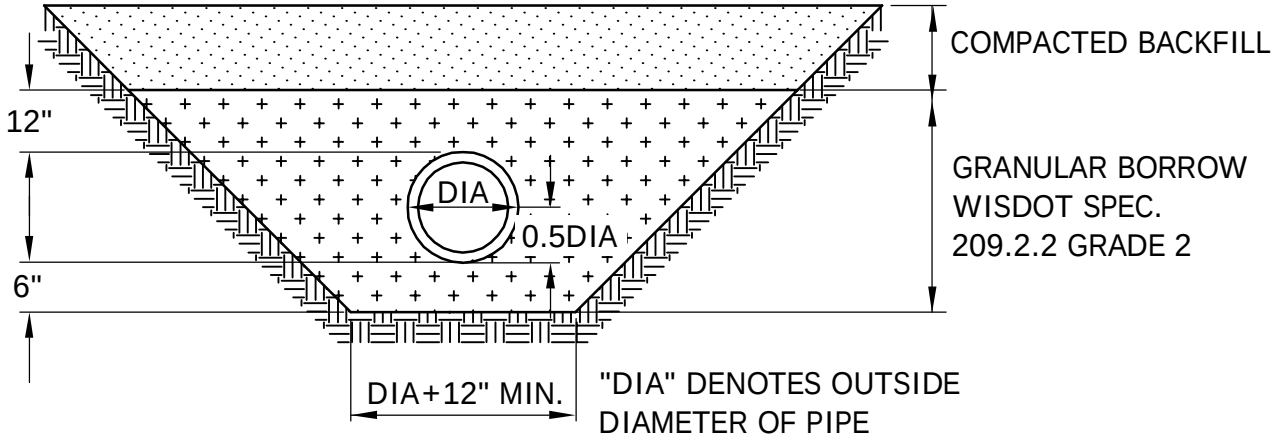
CLASS C-2

HAND SHAPED FROM
ANGULAR BEDDING MATERIAL

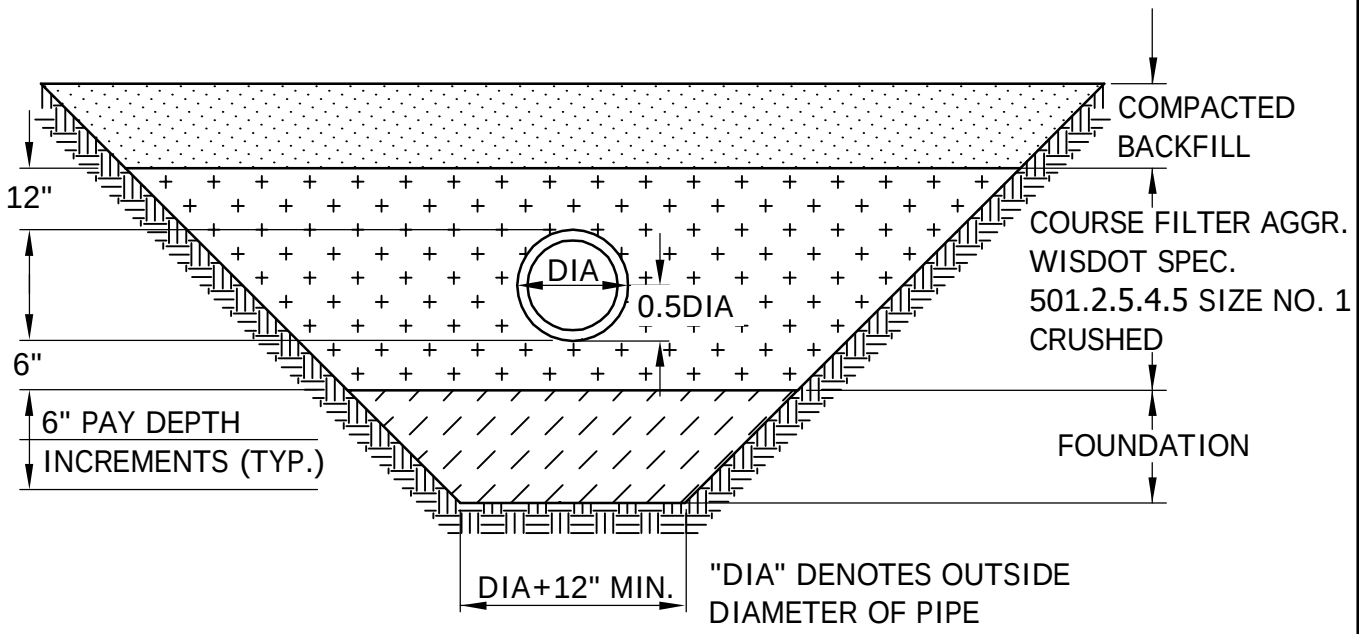
BEDDING METHODS FOR RCP AND DIP
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
BED-01



PIPE FOUNDATION & BEDDING IN GOOD SOILS

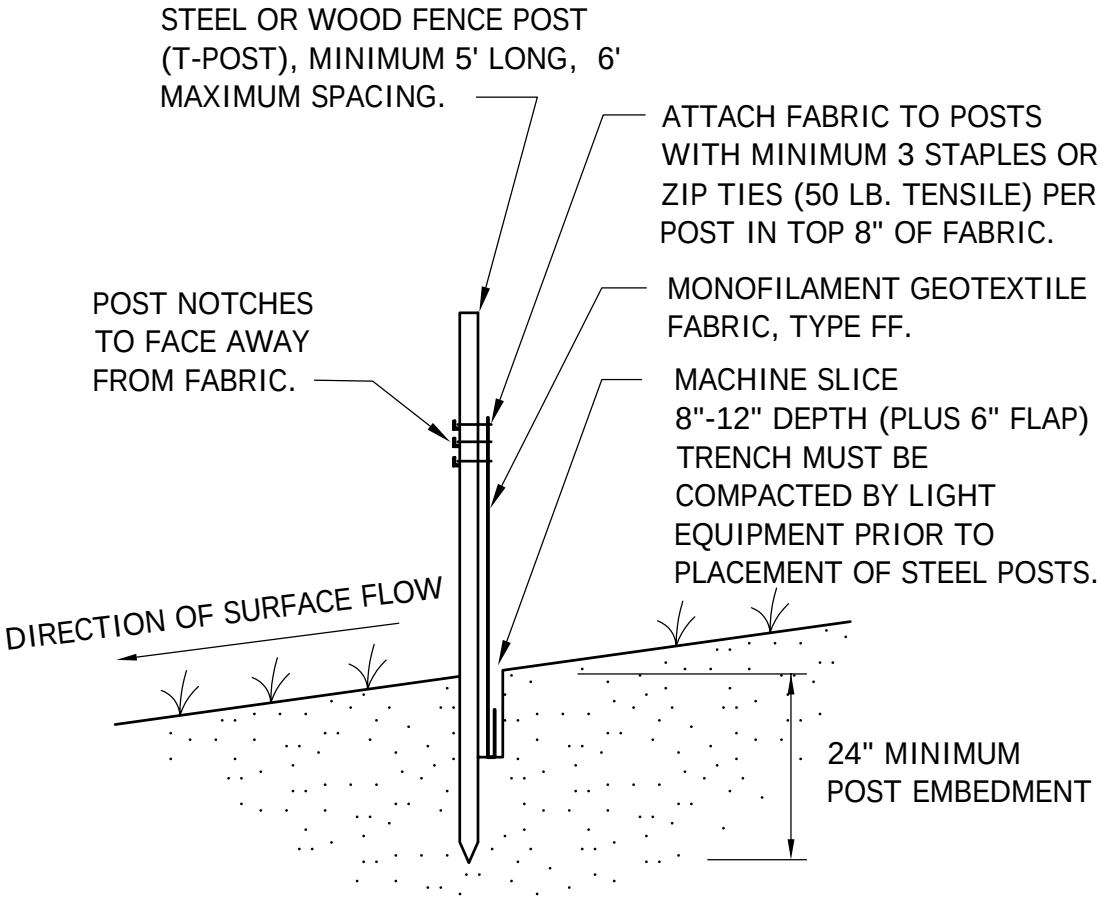


PIPE FOUNDATION & BEDDING IN POOR SOILS

BEDDING METHODS FOR PVC
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
BED-02



NOTE:
The machine sliced method (this detail) is the standard silt fence installation method. Heavy-duty or standard silt fence installation methods should only be used when approved or directed by the Town.

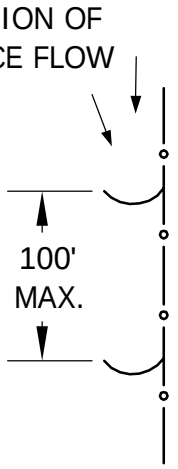
SILT FENCE MACHINE SLICED
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
FEB 2021

PLATE NO.
ERO-01

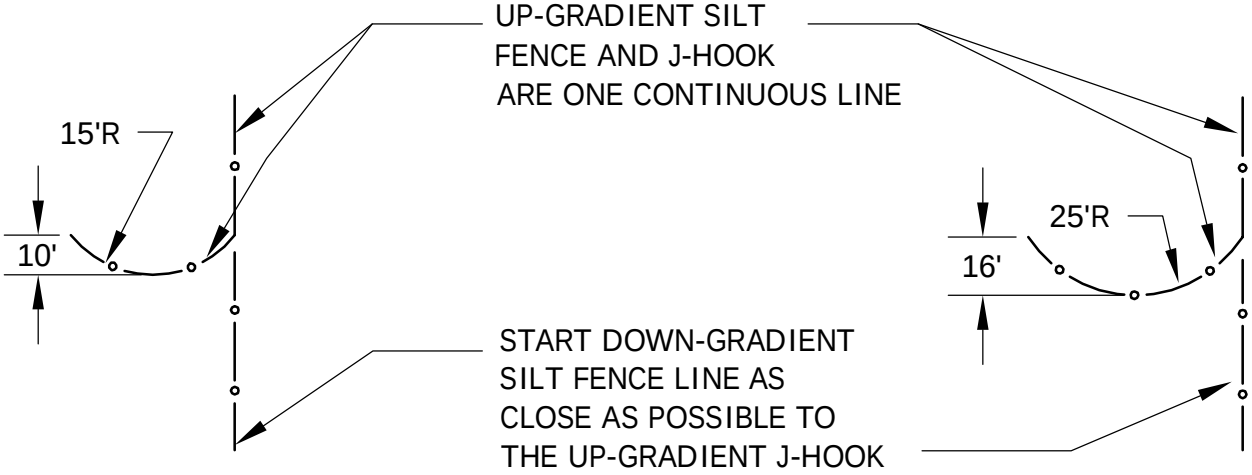
PLAN VIEW

I. SPACING REQUIREMENTS



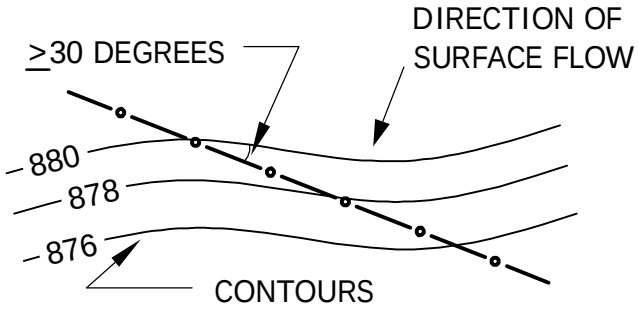
NOTE: SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.

II. SIZING REQUIREMENTS: J15, J25



J15 - FOR CATCHMENT AREA <0.25 ACRES

J25 - FOR CATCHMENT AREA ≥0.25 ACRES

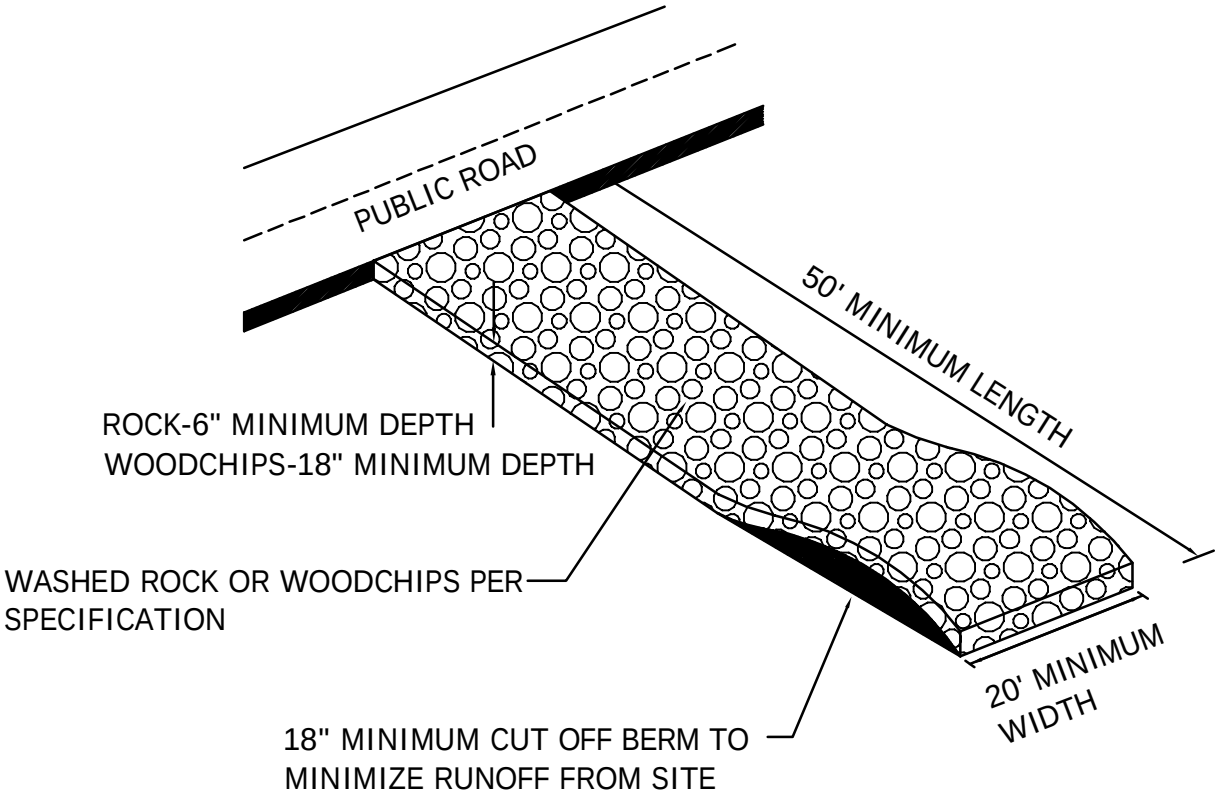


NOTE:
J-HOOKS SHALL BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.

SILT FENCE J-HOOK
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-02



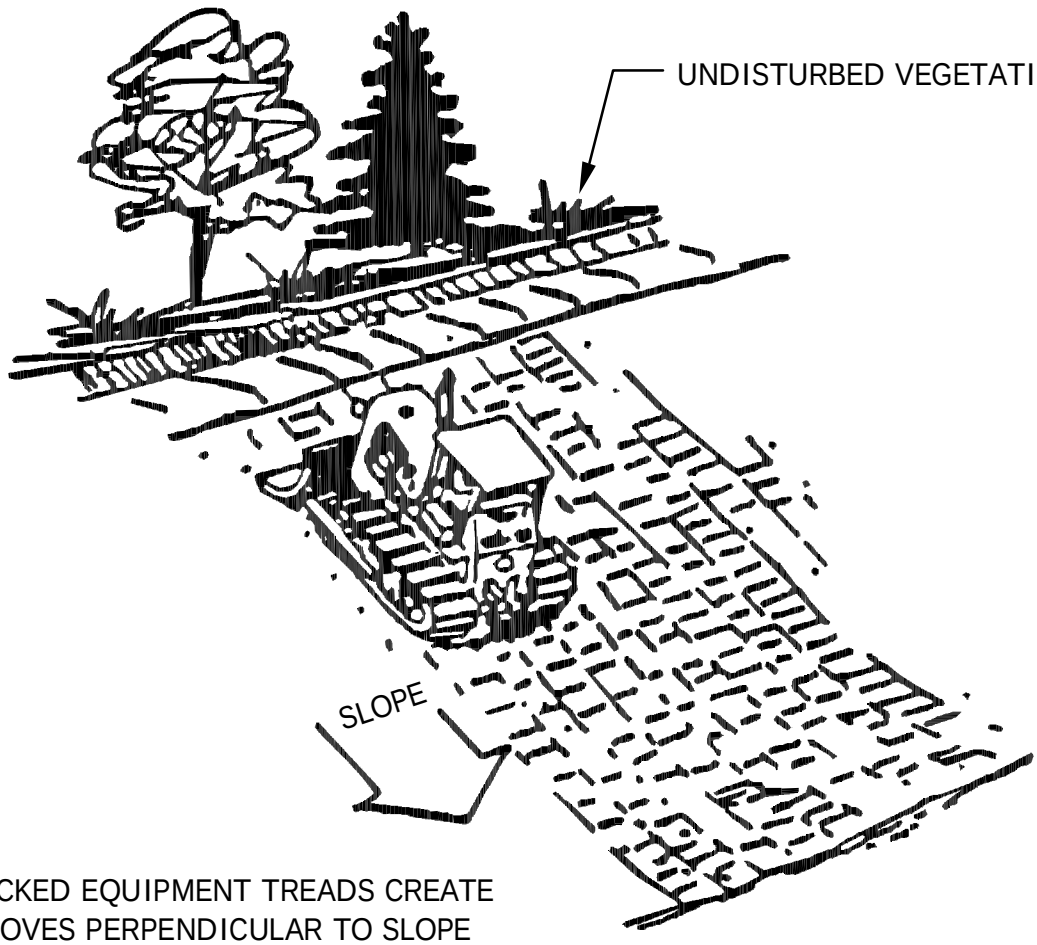
Notes:

1. Filter fabric shall be placed under rock to stop mud migration through rock.
2. Filter fabric is not required under woodchips.
3. Entrance must be maintained regularly to prevent sedimentation on public roadways.

CONSTRUCTION ENTRANCE
ROCK OR WOOD CHIP
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-03



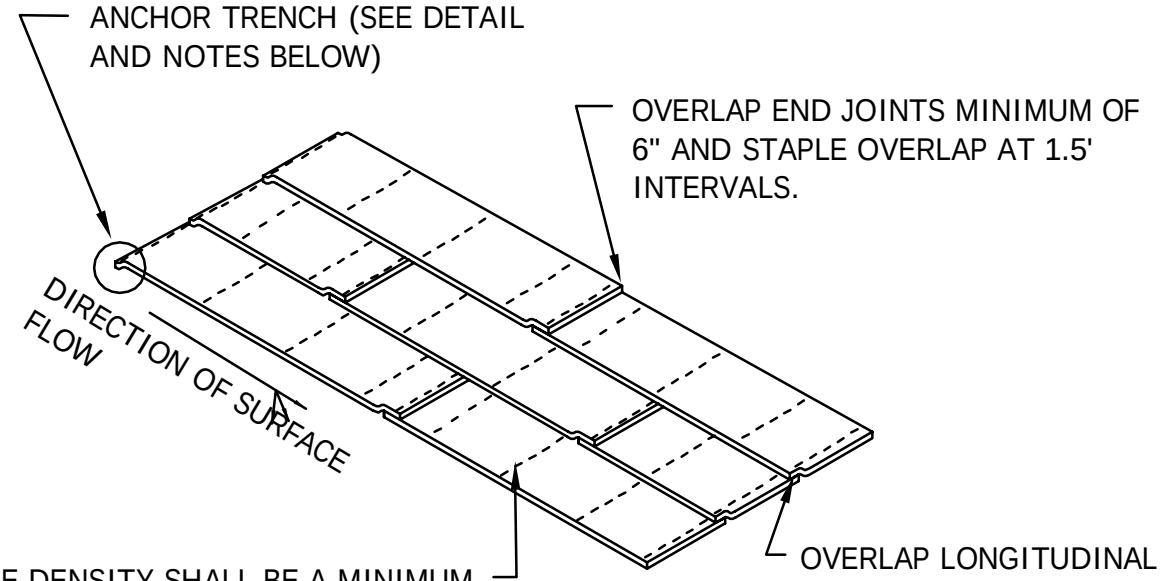
TRACKED EQUIPMENT TREADS CREATE GROOVES PERPENDICULAR TO SLOPE DIRECTION.

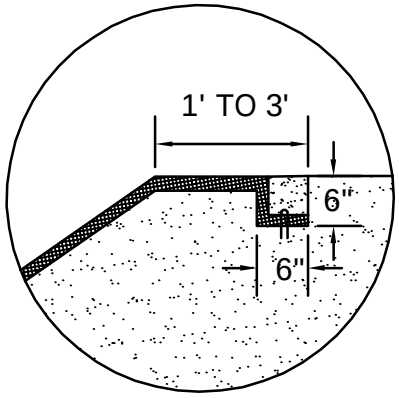
Note:
All slopes with a grade equal to or steeper than 3:1 require slope tracking. Slopes with a grade more gradual than 3:1 require slope tracking if the stabilization method is erosion control blanket or hydromulch.

TEMPORARY SLOPE GRADING
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-04





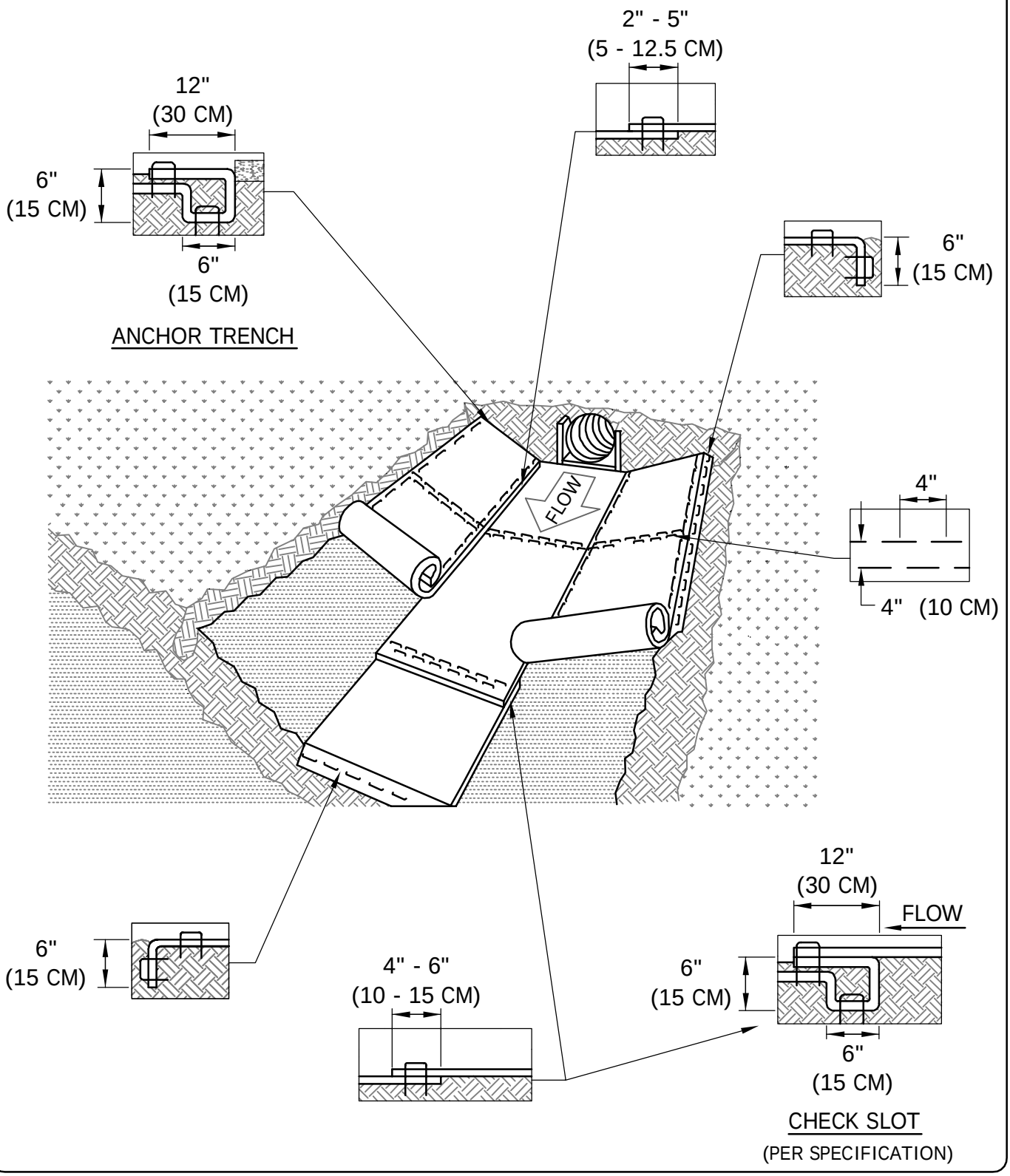
ANCHOR TRENCH

1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH

EROSION CONTROL BLANKET
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

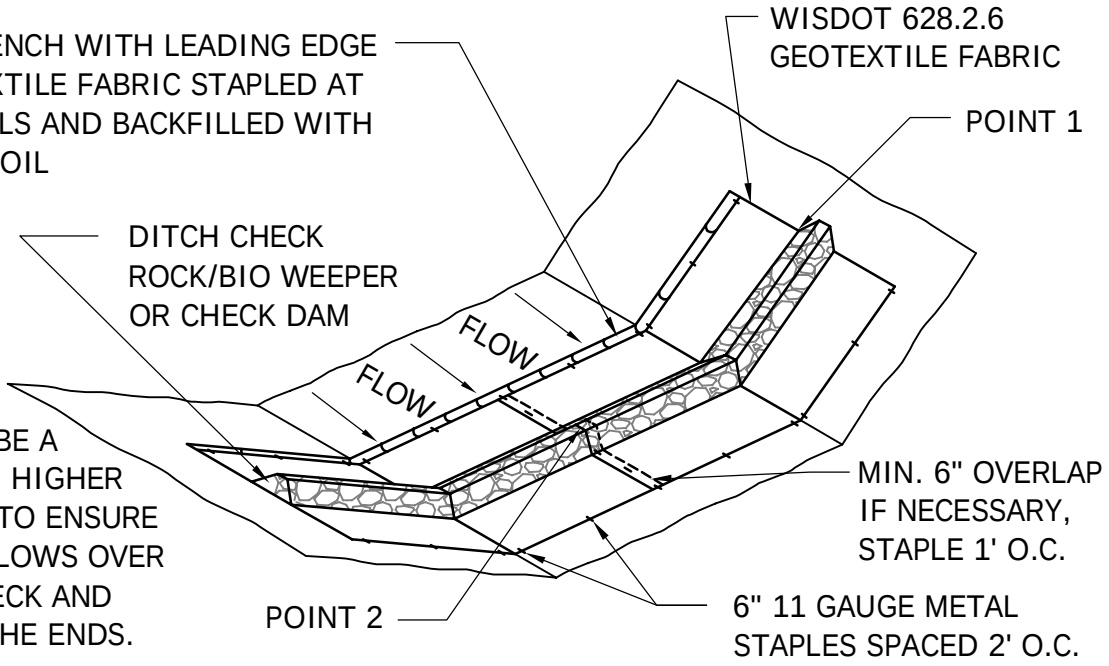
PLATE NO.
ERO-05



EROSION CONTROL BLANKET
CHANNEL INSTALLATION
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

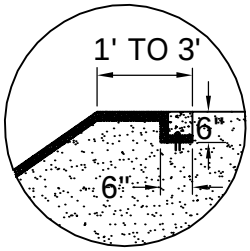
PLATE NO.
ERO-06

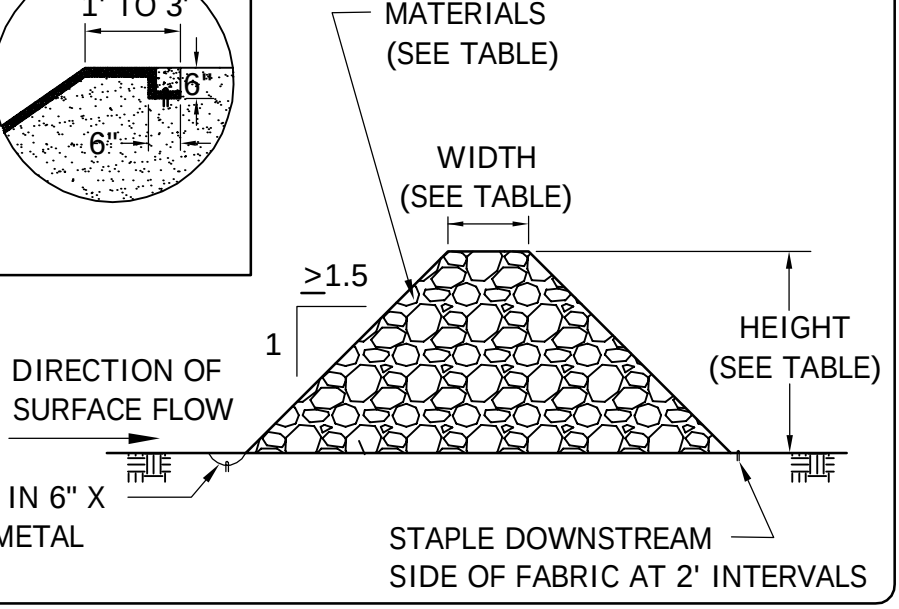


	HEIGHT (INCHES)	WIDTH (INCHES)	MATERIAL
SMALL CHECK	24	12 - 18	WISDOT MED. RIP RAP
LARGE CHECK	36	24 - 30	WISDOT MED. RIP RAP
ROCK WEEPER	18	6 - 12	1 ½" WASHED ROCK

ANCHOR TRENCH

1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT

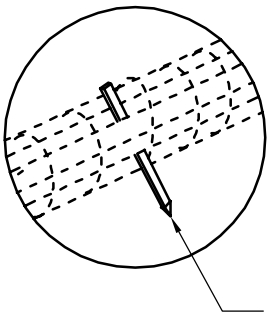


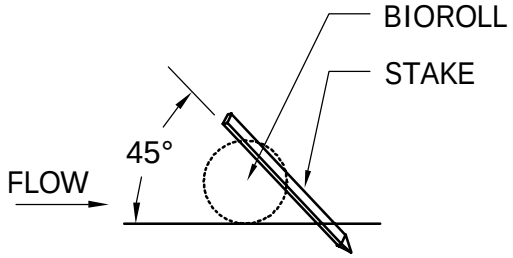


ROCK DITCH CHECK / WEEPER
SIZING & MATERIALS
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

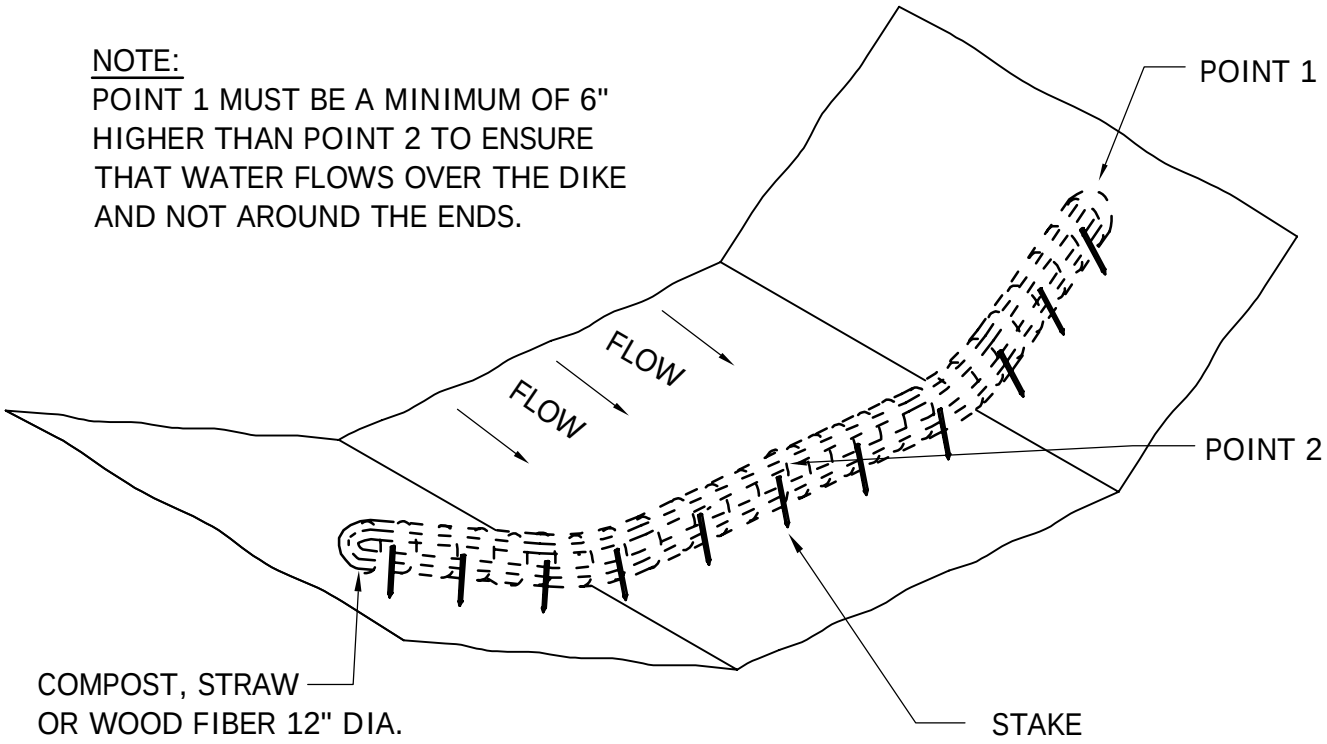
PLATE NO.
ERO-07





2" x 2" x 16" LONG WOODEN STAKES AT 1'-0" SPACING . STAKES SHALL BE DRIVEN THROUGH THE BACK HALF OF THE FILTER LOG AT AN ANGLE OF 45° WITH THE TOP OF THE STAKE POINTING UPSTREAM.

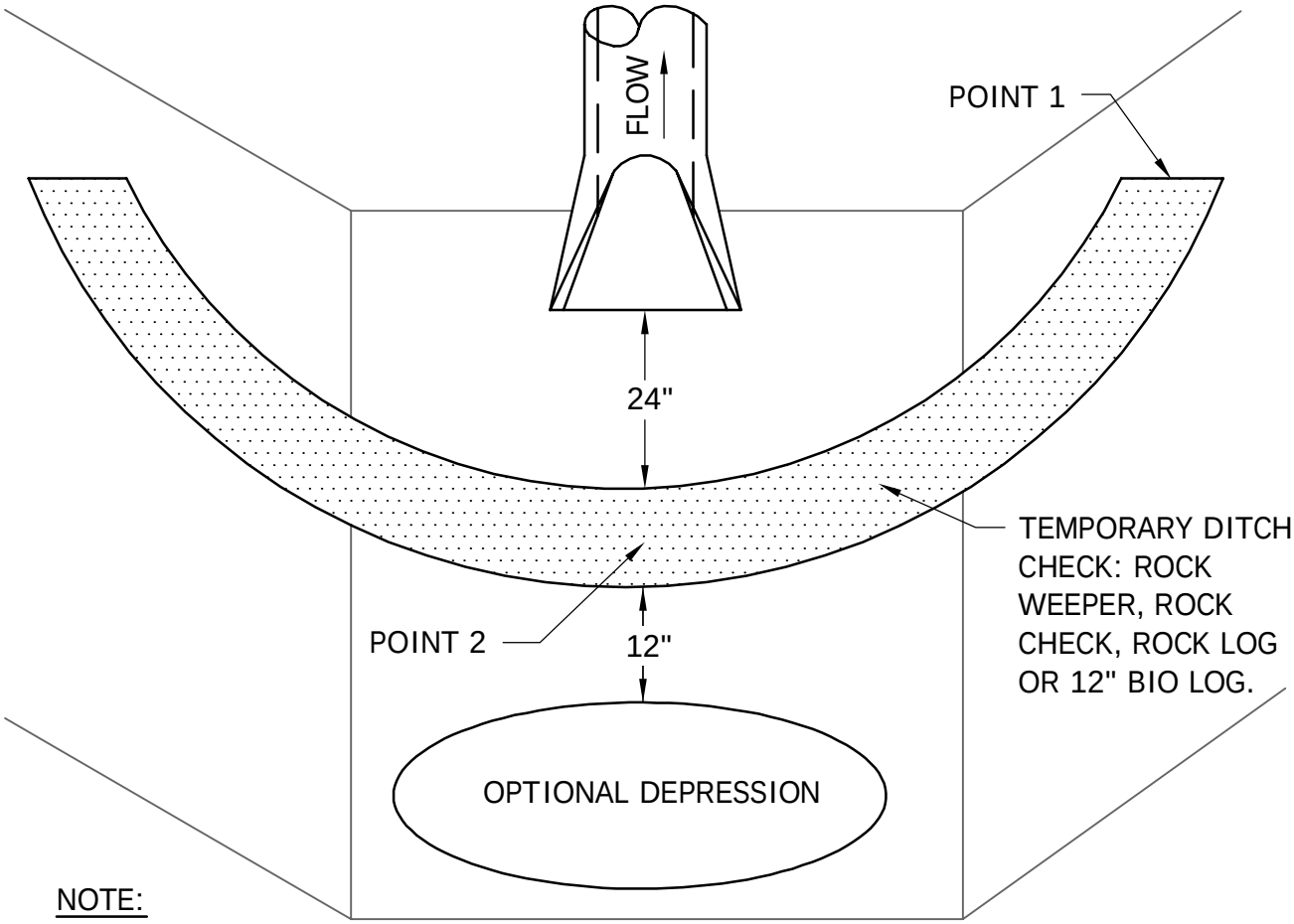
NOTE:
POINT 1 MUST BE A MINIMUM OF 6" HIGHER THAN POINT 2 TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.



FILTER LOG DITCH CHECK
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

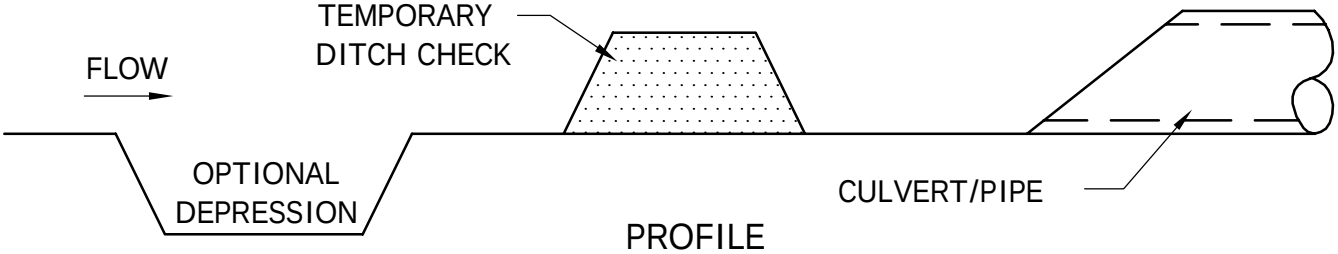
PLATE NO.
ERO-08



NOTE:
POINT 1 MUST BE MINIMUM OF 6" HIGHER THAN POINT 2, TO ENSURE WATER FLOWS THROUGH AND OVER THE CHECK AND NOT AROUND THE ENDS

PLAN VIEW

	HEIGHT (inches)	WIDTH (inches)	MATERIAL
SMALL CHECK	24	12-18	WISDOT MEDIUM RIP-RAP
ROCK WEEPER	18	6-12	1 ½" WASHED ROCK



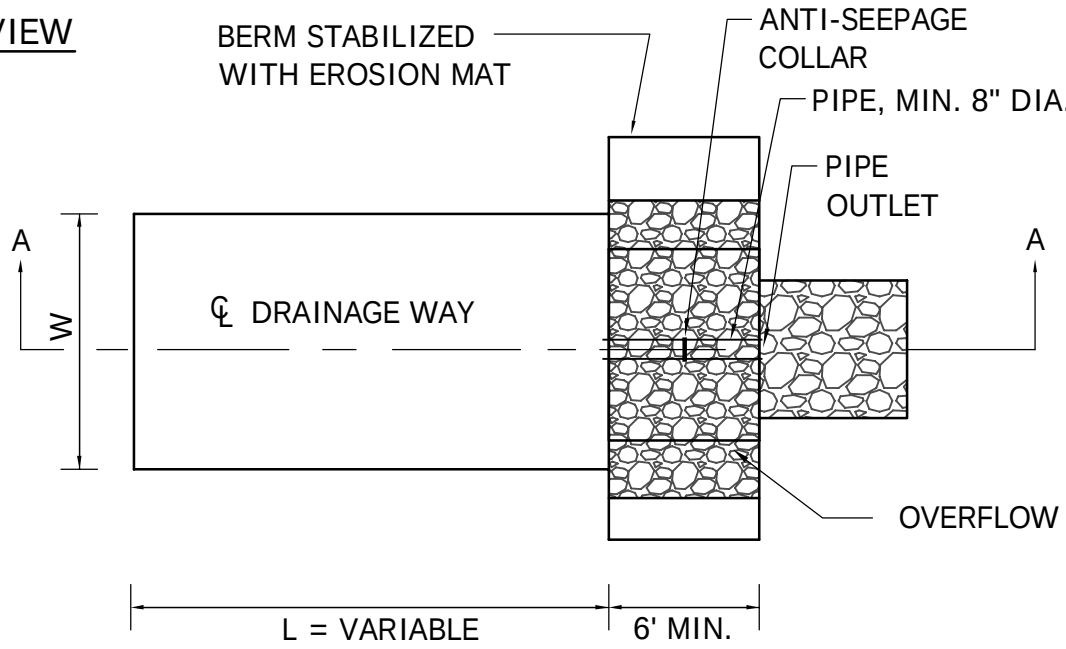
PROFILE

CULVERT/PIPE PROTECTION
TOWN OF ST. JOSEPH
WISCONSIN

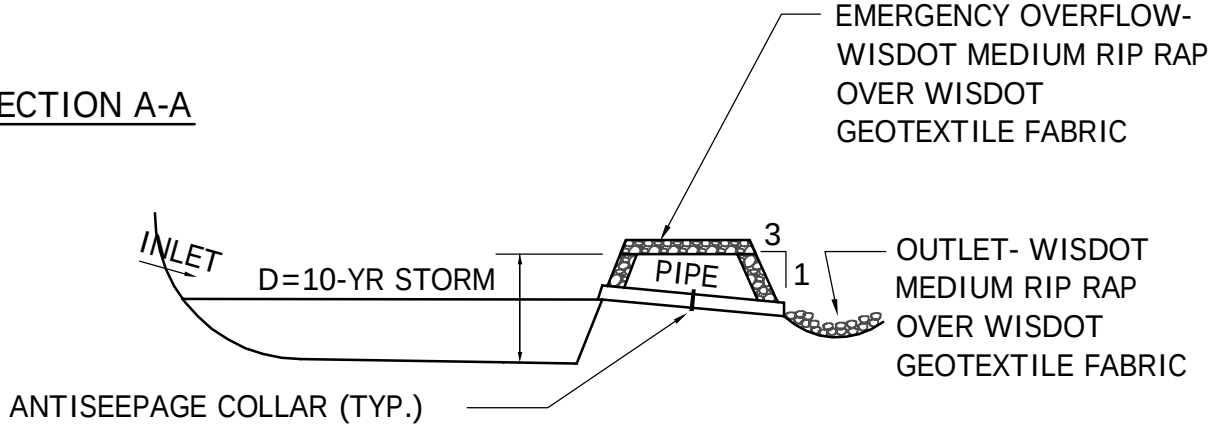
LAST REVISION:
AUG 2016

PLATE NO.
ERO-09

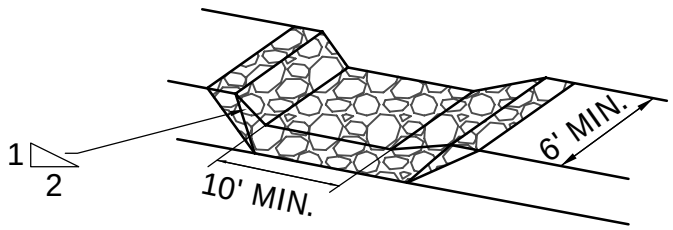
I. PLAN VIEW



II. SECTION A-A



III. BASIN EMERGENCY OVERFLOW



NOTES:

BASIN USED FOR 10 ACRES DRAINAGE AREA OR MORE. DESIGN RUNOFF VOLUME IS FROM A 2-YR, 24-HR STORM PER ACRE DRAINED TO THE BASIN. BASIN VOLUME MUST BE A MIN. OF 1800 CUBIC FEET/ACRE.

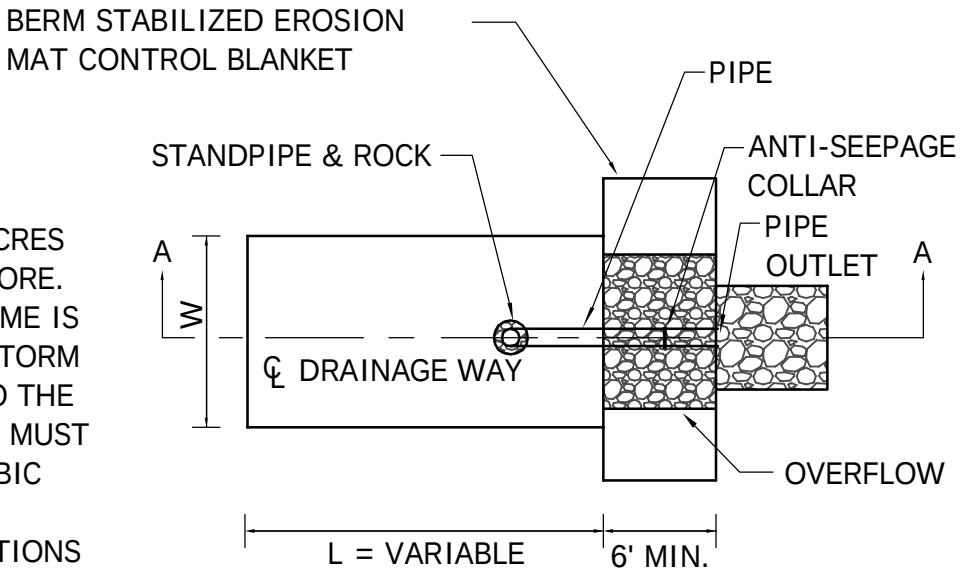
SEE PLANS/SPECIFICATIONS FOR BASIN DIMENSIONS AND PIPE SIZE AND SLOPE.

TEMPORARY SEDIMENTATION BASIN
PIPE OUTLET
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-10

I. PLAN VIEW

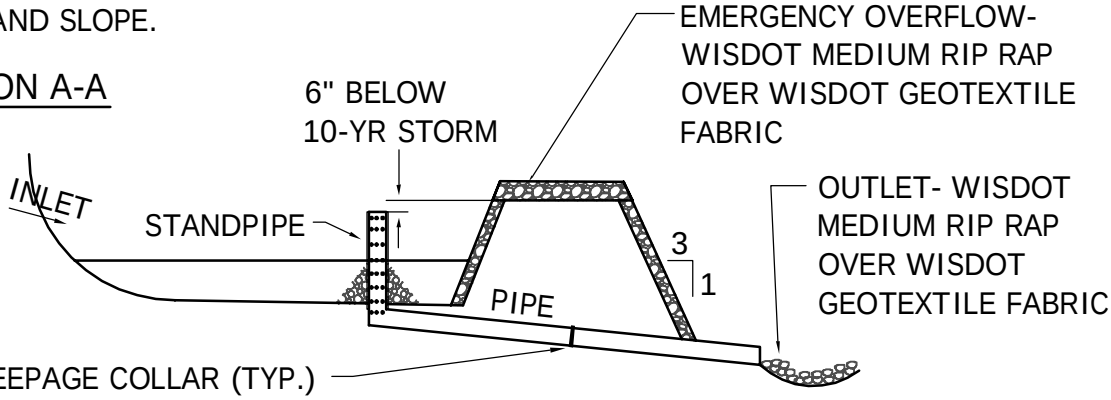


NOTES:

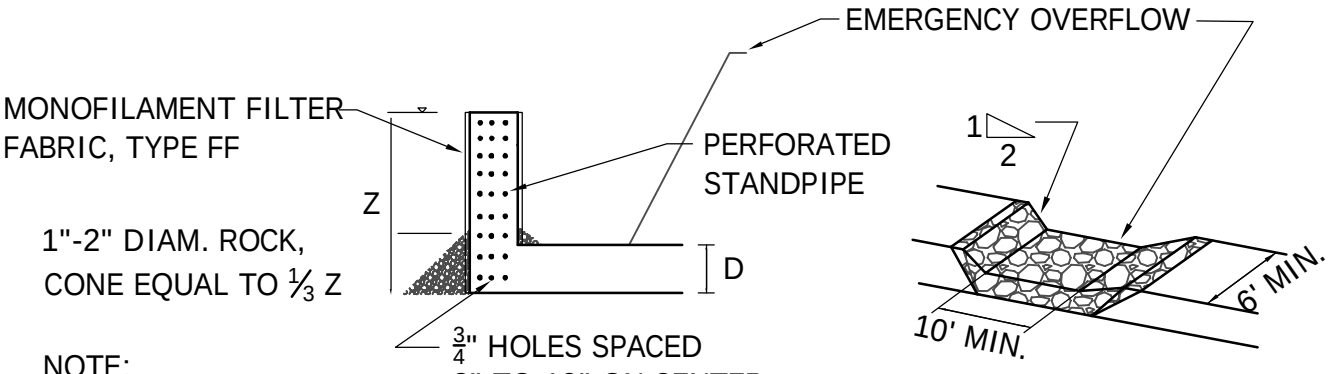
BASIN USED FOR 10 ACRES DRAINAGE AREA OR MORE. DESIGN RUNOFF VOLUME IS FROM A 2-YR, 24-HR STORM PER ACRE DRAINED TO THE BASIN. BASIN VOLUME MUST BE A MIN. OF 1800 CUBIC FEET/ACRE.

SEE PLANS/SPECIFICATIONS FOR BASIN DIMENSIONS AND PIPE SIZE AND SLOPE.

II. SECTION A-A



III. BASIN STANDPIPE AND EMERGENCY OVERFLOW



NOTE:

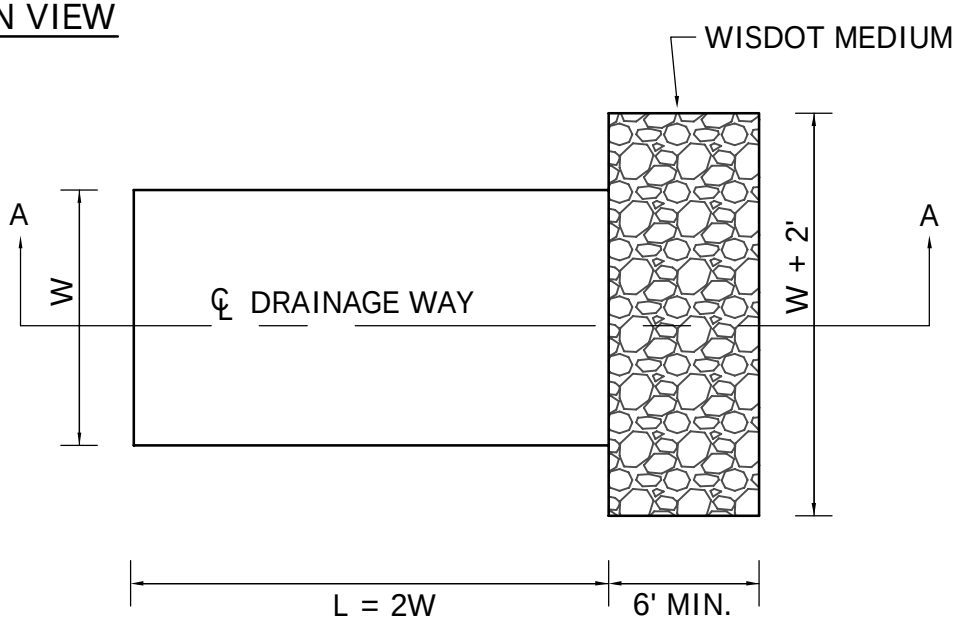
PIPE MATERIAL SHOULD BE RIGID

TEMPORARY SEDIMENTATION BASIN
STANDPIPE OUTLET
TOWN OF ST. JOSEPH
WISCONSIN

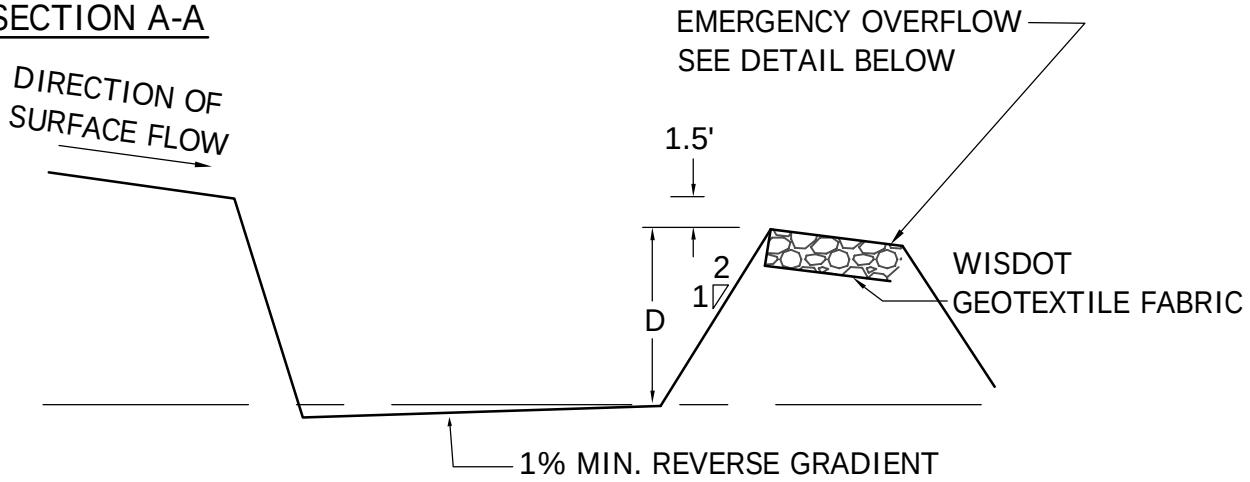
LAST REVISION:
AUG 2016

PLATE NO.
ERO-11

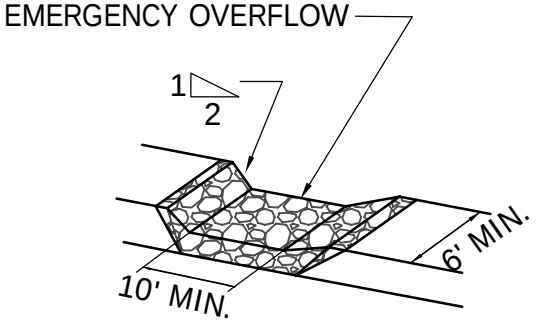
I. PLAN VIEW



II. SECTION A-A



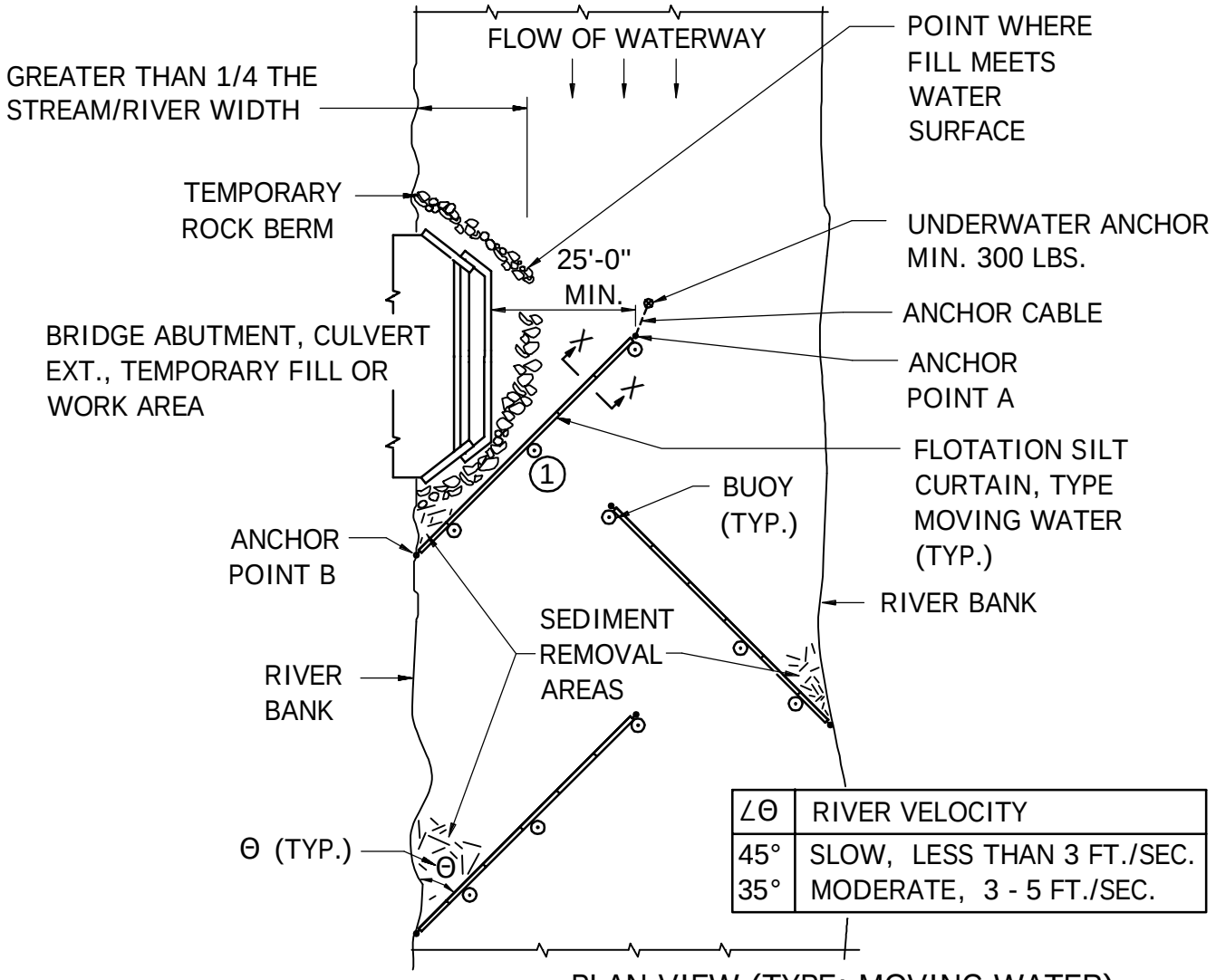
NOTE:
D=3' MIN, 5' MAX
W=10' MIN, 25' MAX
W(FT.)= 10 X DRAINAGE AREA (AC.)



TEMPORARY SEDIMENT TRAP
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

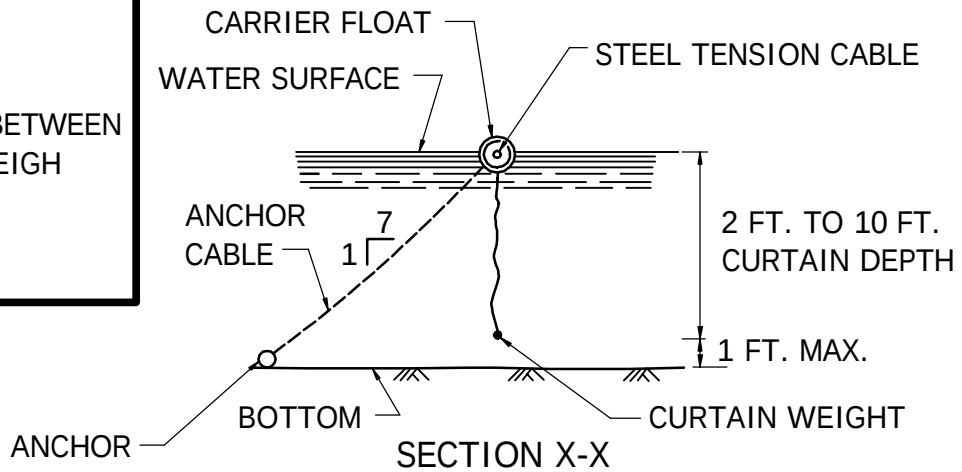
PLATE NO.
ERO-12



∠Θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW (TYPE: MOVING WATER)

NOTE:
(1) 100 FT. MAX. SPACING BETWEEN ANCHORS. ANCHORS WEIGH MIN. 40 LBS.

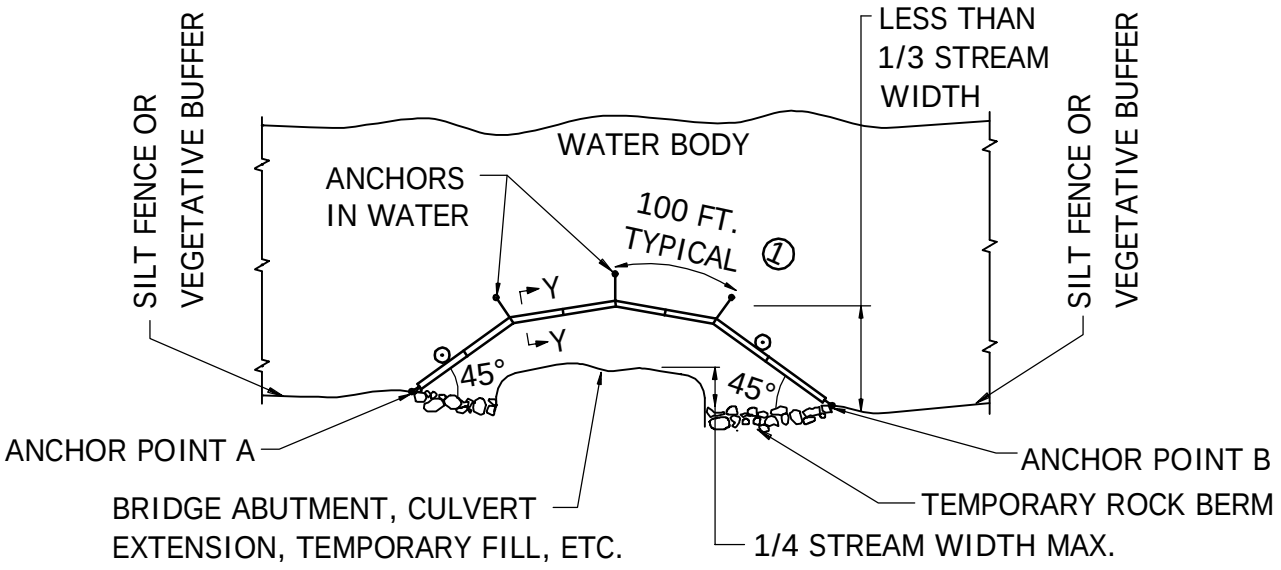


SECTION X-X

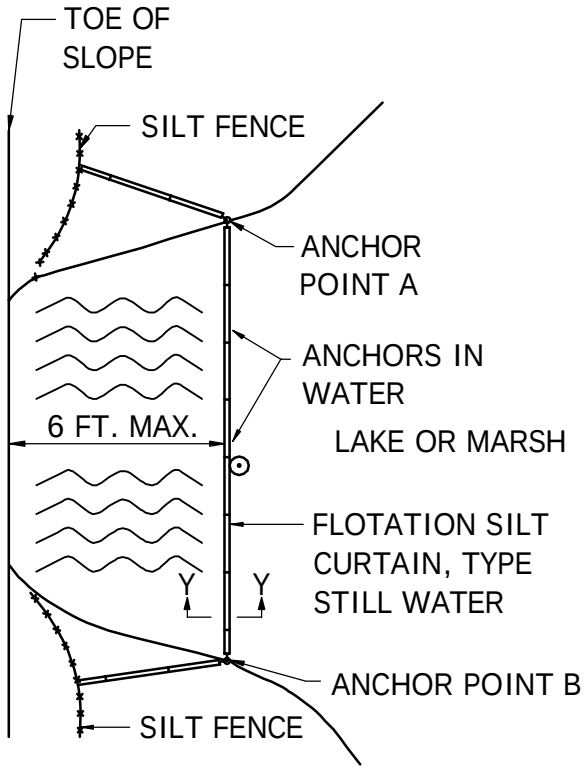
FLOATING SILT CURTAIN
MOVING WATER
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-13



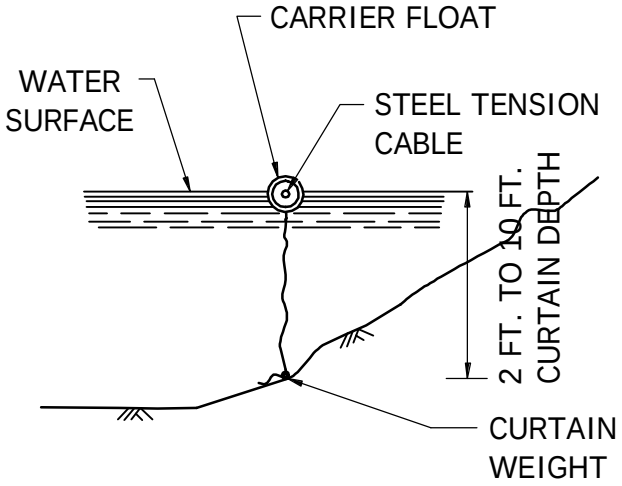
PLAN VIEW (TYPE: WORK AREA)



PLAN VIEW (TYPE: STILL WATER)

NOTES:

(1) 100 FT. MAX. SPACING BETWEEN ANCHORS. ANCHORS WEIGH MIN. 40 LBS.



SECTION Y-Y

FLOATING SILT CURTAIN
STILL WATER
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

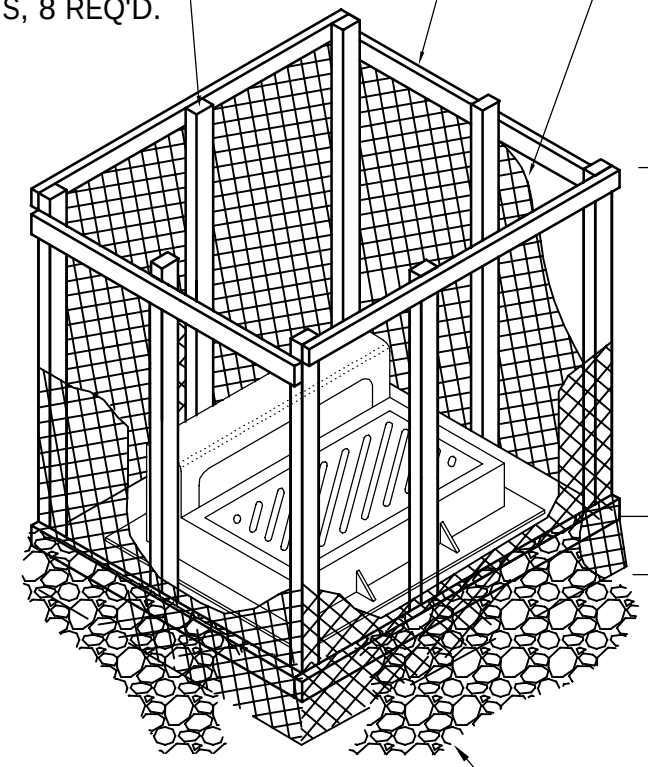
PLATE NO.
ERO-14

WOODEN LATH SHALL BE NAILED SECURELY TO THE POST MEMBER TO SECURE FILTER FABRIC.

2" X 4" HORIZONTAL MEMBERS CONTINUOUS AROUND TOP AND BOTTOM. FASTENED TO EACH POST USING 2-20D COMMON NAILS

2" X 4" X 2.5' LONG WOOD POSTS, 8 REQ'D.

MONOFILAMENT GEOTEXTILE FABRIC, TYPE FF. ADDITIONAL 8-10" OF FABRIC FLAP AT BOTTOM OF BOX



8-10" FABRIC FLAP EXTENDING BEYOND BOTTOM 2"x4" - BURY UNDER ROCK TO PREVENT UNDERWASHING

1 1/2" WASHED ROCK
1' DEEP X 1' WIDE

NOTES:

CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.

INLET PROTECTION FOR CATCH BASIN
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

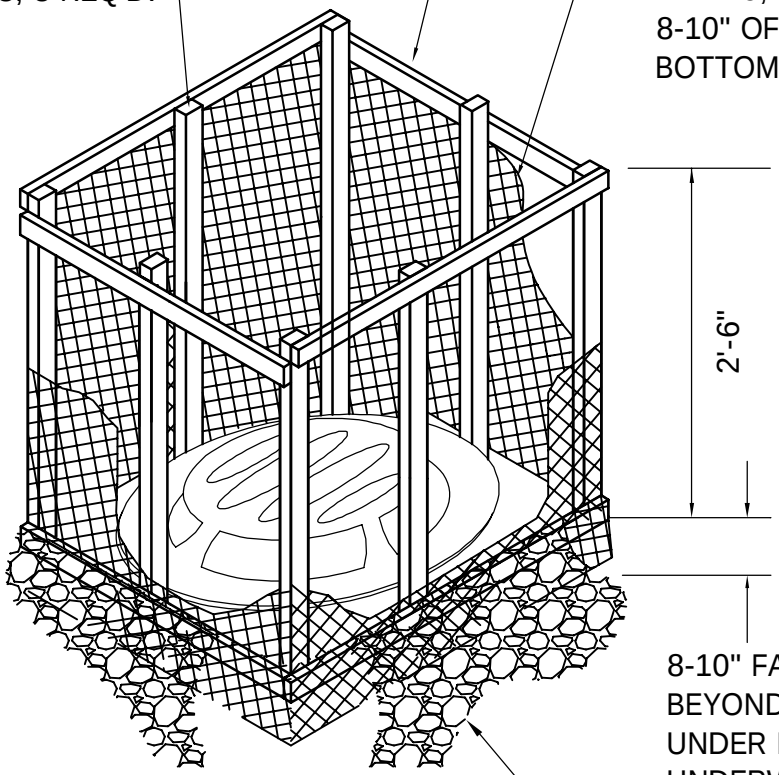
PLATE NO.
ERO-15

WOODEN LATH SHALL BE NAILED SECURELY TO THE POST MEMBER TO SECURE FILTER FABRIC.

2" X 4" HORIZONTAL MEMBERS CONTINUOUS AROUND TOP AND BOTTOM. FASTENED TO EACH POST USING 2-20D COMMON NAILS

2" X 4" X 2.5' LONG WOOD POSTS, 8 REQ'D.

MONOFILAMENT GEOTEXTILE FABRIC, TYPE FF. ADDITIONAL 8-10" OF FABRIC FLAP AT BOTTOM OF BOX



8-10" FABRIC FLAP EXTENDING BEYOND BOTTOM 2"X4" - BURY UNDER ROCK TO PREVENT UNDERWASHING

1 1/2" WASHED ROCK
1' DEEP X 1' WIDE

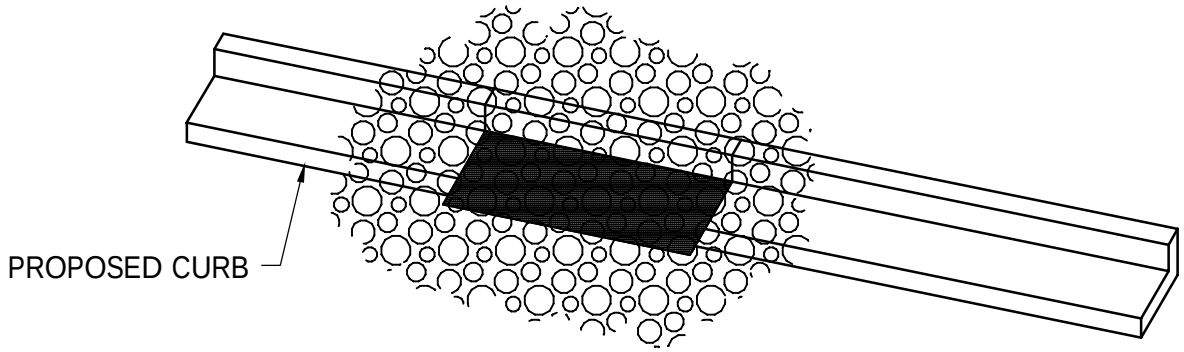
NOTES:
CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.

INLET PROTECTION FOR
BEEHIVE CATCH BASIN
TOWN OF ST. JOSEPH
WISCONSIN

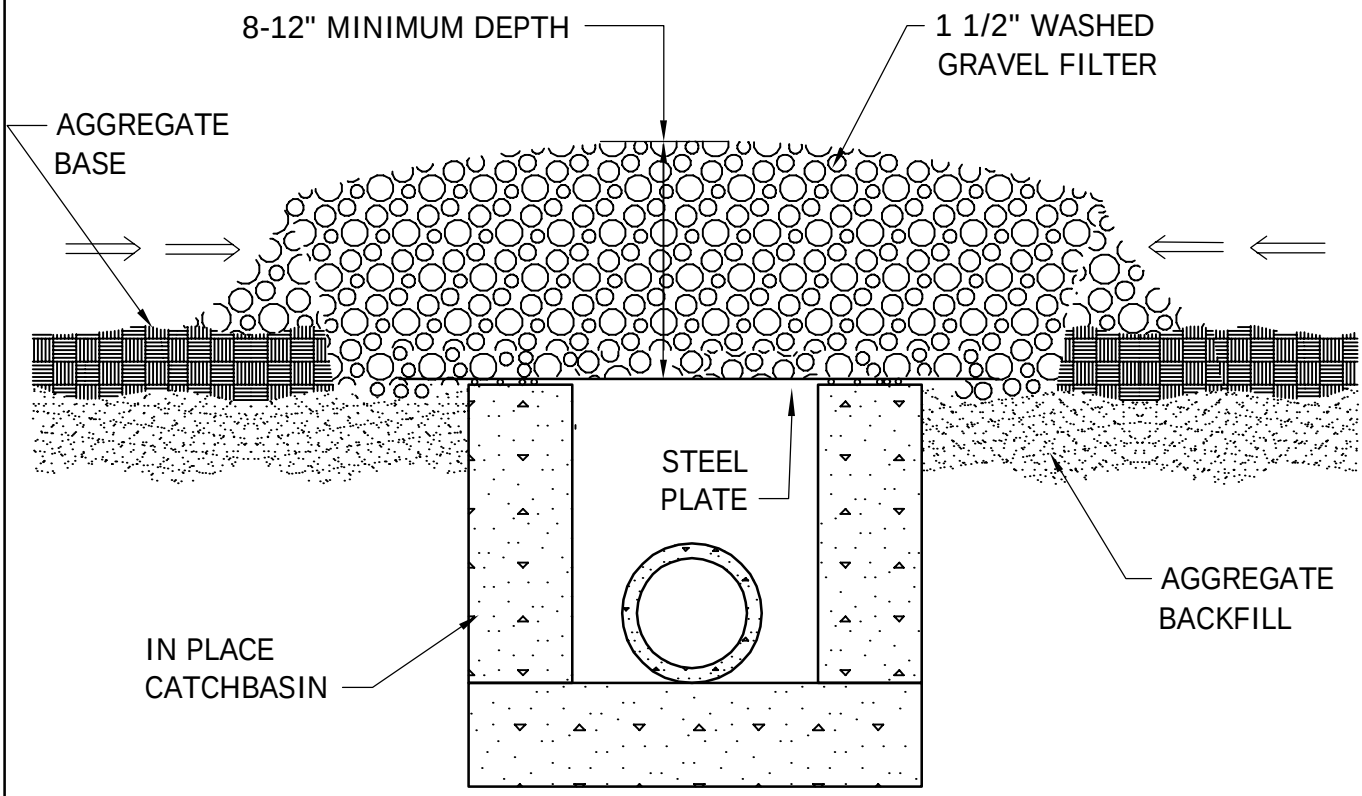
LAST REVISION:
AUG 2016

PLATE NO.
ERO-16

PLAN



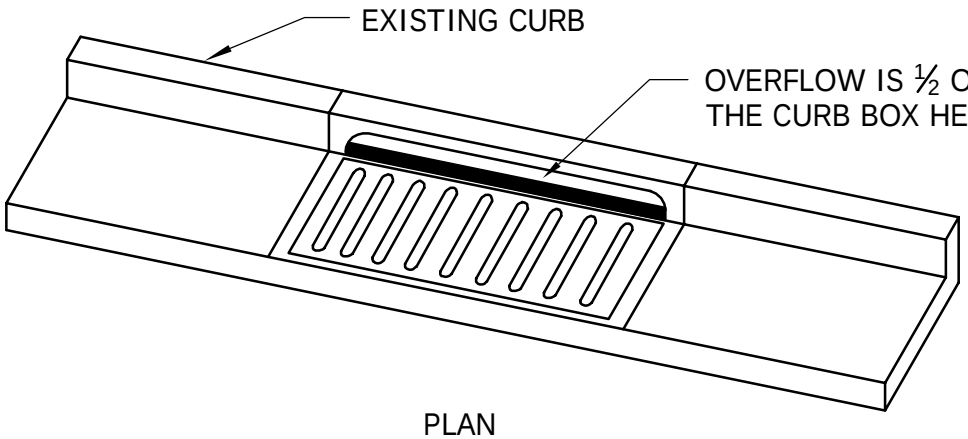
⟸ = DIRECTION OF SURFACE FLOW



INLET PROTECTION ROCK FILTER
FOR CATCH BASIN
TOWN OF ST. JOSEPH
WISCONSIN

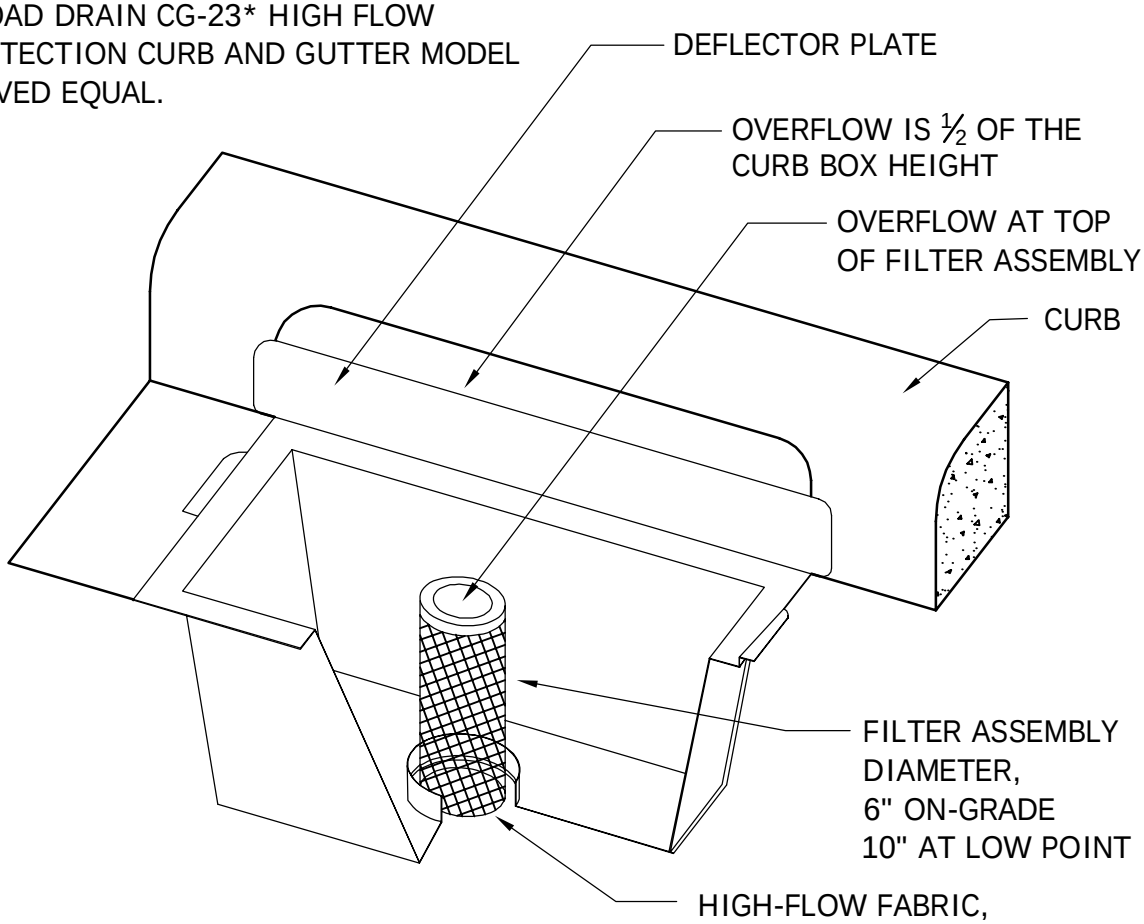
LAST REVISION:
AUG 2016

PLATE NO.
ERO-17



PLAN

WIMCO ROAD DRAIN CG-23* HIGH FLOW INLET PROTECTION CURB AND GUTTER MODEL OR APPROVED EQUAL.



* FOR THE R-3290-VB STANDARD CASTING, INSTALL WIMCO ROAD DRAIN CG-3290 OR APPROVED EQUAL.

CATCH BASIN INLET PROTECTION
FOR AFTER PAVING
TOWN OF ST. JOSEPH
WISCONSIN

LAST REVISION:
AUG 2016

PLATE NO.
ERO-18