RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2023-064

Considered at Board of Managers Meeting: January 10, 2023

Received complete: December 13, 2023

Applicant: City of Eden Prairie, Patrick Sejkora, PE

Consultant: SRF

Project: Rainbow Drive Culvert Replacement – The proposed project includes replacement of an existing large arch corrugated metal culvert that conveys Purgatory Creek under Rainbow Drive in the vicinity of Eden Prairie Road in Eden Prairie.

Location: Rainbow Drive, Eden Prairie, MN

Reviewer: Scott Sobiech, PE, Barr Engineering

Proposed Board Action

Manager _____ moved and Manager _____ seconded adoption of the following resolutions based on the permit report that follows and the presentation of the matter at the January 10, 2023 meeting of the managers. Resolved that the application for Permit 2023-064 is approved, subject to the conditions and stipulations set forth in the Recommendations section of the attached report;

Resolved that on determination by the RPBCWD administrator that the conditions of approval have been affirmatively resolved, the RPBCWD president or administrator is authorized and directed to sign and deliver Permit 2023-064 to the applicant on behalf of RPBCWD.

Upon vote, the resolutions were adopted, _____ [VOTE TALLY].

Rule Conformance Summary

Rule	Issue	Conforms to RBPCWD Rules?	Comments
B	**Floodplain Management and Drainage Alterations**	Yes	
C	**Erosion Control Plan**	See Comment	See rule-specific permit condition C1& C2 related to requiring topsoil with 5% organic matter and providing name and contact information for the individual responsible for erosion control.
D	**Wetland and Creek Buffer**	See Comment	See rule-specific permit condition D1 related to incorporating the buffer into the programmatic maintenance agreement between RPBCWD and the city.

Rule	Issue	Conforms to RBPCWD Rules?	Comments
G	**Waterbody Crossing and Structures**	See Comment	See rule-specific permit condition G1 related to incorporating the crossing into the programmatic maintenance agreement between RPBCWD and the city.
L	**Permit Fee**	NA	Governmental Entity
M	**Financial Assurance**	NA	Governmental Entity

Project Background

The existing culvert conveying Purgatory Creek beneath Rainbow Drive, a 10.6-foot by 7.5-foot corrugated metal arch pipe, is deteriorating and at the end of its design life. The City is proposing to replace the culvert under the roadway with a 14-foot by 5-foot concrete box culvert and bury 0.25 feet of the bottom to ensure the crossing performs similar to the existing crossing. The proposed roadway above the culvert will be reconstructed to similar grades and two catch basins with sumps will be added to capture and convey runoff. Work is within right-of-way owned by the City of Eden Prairie and temporary easements on adjacent private property.

Because the proposed work constitutes a linear project as defined for purposes of the rules and involves the addition of less than 10,000 square feet of new impervious and the full replacement of less than 25,000 square feet of impervious surface, the project is exempt from stormwater-management review by Rule J, subsection 2.4.

The project site information is summarized below:

Description	Area (acres)
Total Site Area	0.3
Existing Site Impervious	0.1
Post-Construction Site Impervious	0.1
Change in Site Impervious Area	0.0
Disturbed Impervious Surface	0.1 (100% disturbed)
Total Disturbed Area	0.3

Exhibits:

1. Permit Application received September 27, 2023 (applicant was notified of an incomplete application on October 2, 2023; information completing the application was received on December 13, 2023)
2. Project Narrative Memorandum received September 27, 2023 (revision dated November 15, 2023 and December 7, 2023)
3. Design Plans Sheets dated September 14, 2023 (revision dated March 7, 2023 and December 7, 2023)

4. Hydraulic Analysis Memo dated September 21, 2023 (revision dated October 25, 2023 and November 22, 2023)
5. Signed No Rise Certificate
6. Response to RPBCWD comments received December 13, 2023
7. Response to RPBCWD comments received December 15, 2023

Rule Specific Permit Conditions

Rule B: Floodplain Management and Drainage Alterations

Because the project disturbs land below the 100-year flood elevation (853.91 ft) of Purgatory Creek, a public watercourse, to replace the culvert under rainbow Drive, the applicant must submit plans showing the project conforms to the requirements in the RPBCWD Floodplain Management and Drainage Alteration rule (Rule B, Subsection 2.1).

The proposed culvert replacement project conforms to Rule B, Subsections 3.1 because no buildings are proposed to be constructed or reconstructed as part of the project. The summary of the changes to the floodplain storage capacity is provided in the following table. The project meets the requirements for compensatory storage (+/- 1 foot) for any fill placed in the floodplain of Purgatory Creek by providing a net increase in storage of 548 cubic feet (CF), thus conforming with Rule B, Subsection 3.2.

Fill and Cut computation below existing 100-year flood elevation

Elevation Bottom	Elevation Top	Proposed Fill (CF)	Proposed Cut (CF)	Difference (CF)[1]	Net Difference +/- 1 Foot (CF)[1]
845	846	0	47	-47	-47
846	847	0	56	-56	-103
847	848	0	175	-175	-231
848	849	9	192	-183	-358
849	850	76	85	-9	-192
850	851	78	90	-12	-21
851	852	63	98	-35	-47
852	853	147	396	-249	-284
853	853.9	229	11	218	-31
Total		**602**	**1,150**	**-548**	

Notes
(1) Negative (-) volume indicates net cut (ie. increase in storage)

The RPBCWD engineer concurs with the hydraulic analysis conducted by the applicant's engineer which demonstrates that the project will result in less water overflowing the roadway because the proposed culvert has a larger opening with smoother material that will more effectively move water through the crossing. Despite the increased flow in the culvert which is offset by the reduced overflow, the analysis

demonstrates that the post-construction flow velocities through the crossing for the 2-, 50-, and 100-year events will not change compared to existing conditions. Because the modeling confirms that the proposed flow velocity in the downstream channel (2.5 ft/s) remains unchanged from existing conditions (2.5 ft/s) and flood elevation are unchanged, the proposed project is not reasonably likely to have adverse downstream impacts (Rule B, Subsection 3.3). The erosion and sediment-control plan submitted by the applicant to demonstrate compliance with subsection 3.5 of Rule B is analyzed below under Rule C. A note on the plans requiring that activities must be conducted to minimize the potential transfer of aquatic invasive species conforming to Rule B, Subsection 3.6.

The proposed project conforms to the floodplain management and drainage alteration requirements of Rule B.

Rule C: Erosion and Sediment Control

Because the project will involve 0.3 acres of land-disturbing activities, the project must conform to the requirements in the RPBCWD Erosion and Sediment Control rule (Rule C, Subsection 2.1).

The erosion control/turf restoration plan includes installation of silt fence, biolog, inlet protection for storm sewer catch basins, floating silt curtain, turf establishment, daily inspection, placement of a minimum of 6 inches of topsoil, decompaction of areas compacted during construction, and retention of native topsoil onsite. To conform to the RPBCWD Rule C requirements the following revisions are needed:

C1. Revise the erosion control/turf restoration plan to require topsoil containing at least 5% organic matter.
C2. The Applicant must provide the name and contact information of the individual responsible for erosion control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.

Rule D: Wetland and Creek Buffers

Because the proposed work triggers a permit under RPBCWD Rule B and G for the crossing rehabilitation work and Purgatory Creek is a public waters watercourse, Rule D, Subsections 2.1a and 3.1c requires buffer adjacent to this watercourse and 50 feet each from the upstream and downstream extents of disturbance.

Purgatory Creek flows through the project site and requires an average buffer width of 50 feet from the creek centerline, minimum 30 feet in accordance with Rule D, Subsection 3.2.b.v for a public waters watercourse. The construction plan (sheet 19) shows the buffer zone and marker locations as well as demonstrating that the proposed buffer area extends the required average widths and extends upstream and downstream to the right of way limits (Rule D, Subsection 3.1.c, 3.2.b.v and 3.2g). The buffer widths are summarized in the table below.

Regulated Feature		Required Minimum Width (ft)	Required Average Width[1] (ft)	Provided Minimum Width (ft)	Provided Average Width (ft)
Purgatory Creek		30	50	50	50

The erosion control/turf restoration plan indicates the Applicant is proposing revegetating disturbed areas within the proposed buffer with native vegetation in conformance with Rule D, Subsection 3.3. A note is included on the plan sheet indicating the project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible conforming to Rule D, Subsection 3.5.

D1. Buffer areas and maintenance requirements must be documented in an agreement after review and approval by RPBCWD in accordance with Rule D, Subsection 3.5. RPBCWD and Eden Prairie have entered into a programmatic maintenance agreement covering city projects subject to RPBCWD regulatory requirements. The buffers associated with this permit (2023-064) must be incorporated into the inventory of those managed in accordance with the programmatic agreement as a condition of approval.

Rule G: Waterbody Crossings and Structures

Because the project will replace a creek crossing along Purgatory Creek, a public watercourse, the project requires conformance with RPBCWD's Waterbody Crossings and Structures Rule (Rule G). The proposed work implicates the criteria in subsections 3.1, 3.2 and 3.7. The proposed work falls within the scope of Minnesota Department of Natural Resources General Permit #2015-1192. (Rule F: Stormwater and Streambank Stabilization is not triggered because the riprap being installed in bank of the creek is to prevent erosion more so than stabilize the bank.)

This work represents a public benefit by replacing a deteriorating culvert to minimize the risk of a pipe collapse and ensuring continued roadway connectivity (Rule G, Subsection 3.1a)

The proposed crossing was modeled in SWMM by the applicant. The analysis shows that the proposed 100-year frequency flood elevation upstream of the crossing (853.9) will match the existing elevation 853.9 M.S.L. and the downstream flood elevation will also match the existing flood elevation of 852.4 M.S.L., thus confirming the project will not increase the flood stage of the existing water body conforming to Rule G, Subsection 3.2a.

This portion of Purgatory Creek is not used for navigation, thus the requirement of Rule G, Subsection 3.2b does not impose requirements on this project. The applicant provided modeling demonstrating to the RPBCWD engineer's satisfaction that the project will not adversely affect water quality or cause increased scour, erosion or sedimentation because the project maintains similar flow velocities through the culvert and downstream creek section. Because the stabilization materials can withstand velocities between 8 – 10 fps, and the modeled 100-year velocity at the downstream end of the culvert is 8.3 fps, the riprap is sized and designed appropriately to withstand the forces and dissipate the energy at the

crossing, thus providing a stable creek system consistent with the criteria in Rule G, Subsection 3.2c. Because this is a replacement of the existing crossing in place, wildlife will continue to be able to use Purgatory Creek as it is used under existing conditions, thus preserving wildlife passage. The proposed layer of sediment/riprap in the bottom of the new culvert will be provided for aquatic organism passage, consistent with Rule G, Subsection 3.2d.

A no-build option would result in flows through the existing deteriorating arch culvert which could eventually lead to failure of the culvert. The applicant dismissed a small bridge because the roadway overtops in a 25-year event, increased maintenance costs, and the large potential impact to the area to facilitate construction. Because the replacement option involves the lesser degree of site disturbance along the creek and maintains existing flow characteristics, this option is the minimal impact solution to the identified issue in the area and for the creek system, consistent with Rule G, Subsection 3.2e.

The erosion control/turf restoration plan includes a note directing the contractor that no work affecting the creek bed shall occur between March 15 and June 15 as required in Rule G, Subsection 3.7a. Banks will be immediately stabilized after completion of permitted work and revegetated as soon as growing conditions allow (Rule G, Subsection 3.7b). A note is included on the plan sheet indicating the project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible (Rule G, Subsection 3.7c).

Rule G, Subsection 3.7d requires compliance with the applicable criteria in subsections 3.3 of Rule F. Construction drawings submitted confirm that riprap is sized appropriately in relation to the erosion potential: The project proposes the use granite riprap having an average size of 9 inches in diameter (MNDOT Class III Riprap). Because the proposed riprap can withstand velocities between 8 – 10 fps, and the modeled 100-year velocity at the downstream end of the culvert is 8.3 fps , stabilization materials are sized and designed appropriately to withstand the velocities and shear stresses through the culvert, thus conforming to Rule F, Subsection 3.3b (i). Drawings confirm the proposed crossing will follow the existing alignment of the watercourse (Rule F, Subsection 3.3b (ii) and 3.3b (iv)). The standard riprap detail included with the drawings indicate that a granular transitional layer and a geotextile fabric will be placed, thus conforming to Rule F, Subsection 3.3b (iii). The drawing illustrates that the proposed riprap will extend to the top of bank, which is lower than the 100-year flood elevation, thus conforming to subsection 3.3b (v). The riprap design reflects energy dissipation and stabilization necessary to minimize erosion at the watercourse and is not placed for cosmetic purposes per Rule F, Subsection 3.3b (vi).

To conform to the RPBCWD Rule G the following revisions are needed:

G1. RPBCWD and Eden Prairie have entered into a programmatic maintenance agreement covering city projects subject to RPBCWD regulatory requirements. The waterbody crossing associated with this permit (2023-064) must be incorporated into the inventory of those managed in accordance with the programmatic agreement as a condition of approval.

Applicable General Requirements:

1. The RPBCWD Administrator and Engineer shall be notified at least three days prior to commencement of work.
2. Construction must be consistent with the plans, specifications, and models that were submitted by the applicant that were the basis of permit approval. The date(s) of the approved plans, specifications, and modeling are listed above and on the permit. The granting of the permit does not in any way relieve the permittee, its engineer, or other professional consultants of responsibility for the permitted work.
3. The grant of the permit does not relieve the permittee of any responsibility to obtain approval of any other regulatory body with authority.
4. The issuance of this permit does not convey any rights to either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
5. In all cases where the doing by the permittee of anything authorized by this permit involves the taking, using or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements or interests, the permittee, before proceeding therewith, must acquire all necessary property rights and interest.
6. RPBCWD's determination to issue this permit was made in reliance on the information provided by the applicant. Any substantive change in the work affecting the nature and extent of applicability of RPBCWD regulatory requirements or substantive changes in the methods or means of compliance with RPBCWD regulatory requirements must be the subject of an application for a permit modification to the RPBCWD.
7. If the conditions herein are met and the permit is issued by RPBCWD, the applicant, by accepting the permit, grants access to the site of the work at all reasonable times during and after construction to authorized representatives of the RPBCWD for inspection of the work.

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project conforms to Rule B.
3. The proposed project will conform to Rules C, D, and G if the conditions listed above are met.
4. Under Minnesota Department of Natural Resources General Permit 2015-1192 (attached to this report), approval of work under RPBCWD rule(s) G constitutes approval under applicable DNR work in waters rules. Compliance with conditions on approval and payment of applicable fees, if any, are necessary to benefit from general permit approval and the responsibility of the applicants.

Recommendation:

Approval of the permit contingent upon:

1. Continued compliance with General Requirements.
2. Receipt of revised construction drawings requiring topsoil containing at least 5% organic matter.
3. The Applicant must provide the name and contact information of the individual responsible for erosion control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.
4. RPBCWD and Eden Prairie have entered into a programmatic maintenance agreement covering city projects subject to RPBCWD regulatory requirements. The buffers and waterbody crossing associated with this permit (2023-064) must be incorporated into the inventory of those managed in accordance with the programmatic agreement as a condition of approval.

DEPARTMENT OF NATURAL RESOURCES

MNDNR PERMITTING AND REPORTING SYSTEM

General Permit Number

2015-1192

Amended

Public Waters Work General Permit

Expiration Date: 05/01/2025

Pursuant to Minnesota Statutes, Chapter 103G, and on the basis of statements and information contained in the permit application, letters, maps, and plans submitted by the applicant and other supporting data, all of which are made part hereof by reference, **PERMISSION IS HEREBY GRANTED** to the applicant to perform actions as authorized below. This permit supersedes the original permit and all previous amendments.

Project Name:	**County:**	**Watershed:**	**Resource:**
Riley-Purgatory-Bluff Creek Watershed District General Permit	Hennepin and Carver	Lower Minnesota River - Shakopee	All Public Waters within Riley-Purgatory-Bluff Creek Watershed

Purpose of Permit:	**Authorized Action:**
Sediment Removal, Sand Blanket w/o Excavation, Sand Blanket w/ Excavation, Riprap (Natural Rock), Retaining Wall, Erosion Control/Stabilization Fill & Grading, Culvert Construction/Modification/Replacement, Bridge Construction/Modification/Replacement, Bioengineering	Place natural rock riprap; shape banks/shorelines for placement of riprap or bioengineering; install beach sand blankets; construct retaining walls, bridges and culverts; remove structures; remove sediment; all in accordance with the Conditions of this permit. For actions addressed by this general permit, no separate GP Authorization is needed from the DNR.
Permittee:	**Authorized Agent:**
Riparian Property Owners within Riley-Purgatory-Bluff Creek Watershed District	N/A

Property Description (*land owned or leased or where work will be conducted*):

Issued Date:	**Effective Date:**	**Expiration Date:**
06/15/2020	05/01/2020	05/01/2025

Authorized Issuer:	**Title:**	**Email Address:**	**Phone Number:**
Tom Hovey	Water Regulations Unit Supervisor	tom.hovey@state.mn.us	651-259-5654

This permit is granted **subject to** the following **CONDITIONS**:

APPLICABLE FEDERAL, STATE, OR LOCAL REGULATIONS: The permittee is not released from any rules, regulations, requirements, or standards of any applicable federal, state, or local agencies; including, but not limited to, the U.S. Army Corps of Engineers, Board of Water and Soil Resources, MN Pollution Control Agency, watershed districts, water management organizations, county, city and township zoning.

NOT ASSIGNABLE: This permit is not assignable by the permittee except with the written consent of the Commissioner of Natural Resources.

NO CHANGES: The permittee shall make no changes, without written permission or amendment previously obtained from the Commissioner of Natural Resources, in the dimensions, capacity or location of any items of work authorized hereunder.

SITE ACCESS: The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the Commissioner of Natural Resources for inspection of the work authorized hereunder.

TERMINATION: This permit may be terminated by the Commissioner of Natural Resources at any time deemed

CONDITIONS continued on next page...

GENERAL PERMIT CONDITIONS (*Continued from previous page*)

necessary for the conservation of water resources of the state, or in the interest of public health and welfare, or for violation of any of the conditions or applicable laws, unless otherwise provided in the permit.

COMPLETION DATE: Construction work authorized under this permit shall be completed on or before the date specified above. The permittee may request an extension of the time to complete the project by submitting a written request, stating the reason thereof, to the Commissioner of Natural Resources.

WRITTEN CONSENT: In all cases where the permittee by performing the work authorized by this permit shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests needed for the work.

PERMISSIVE ONLY / NO LIABILITY: This permit is permissive only. No liability shall be imposed by the State of Minnesota or any of its officers, agents or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation of or failure to comply with the permit or applicable conditions.

EXTENSION OF PUBLIC WATERS: Any extension of the surface of public waters from work authorized by this permit shall become public waters and left open and unobstructed for use by the public.

GP AUTHORIZATION - APPLY USING MPARS: The permittee shall apply for prior authorization for all projects to be constructed under this General Permit using the MNDNR Permitting and Reporting System (MPARS) at www.mndnr.gov/mpars/signin . Users will need to create an account the first time they access the system. Once created, click on the link for ‘Apply for a New Permit/Authorization’ under the Actions box and complete the application questions.

WETLAND CONSERVATION ACT: Where the work authorized by this permit involves the draining or filling of wetlands not subject to DNR regulations, the permittee shall not initiate any work under this permit until the permittee has obtained official approval from the responsible local government unit as required by the Minnesota Wetland Conservation Act.

INVASIVE SPECIES - EQUIPMENT DECONTAMINATION: All equipment intended for use at a project site must be free of prohibited invasive species and aquatic plants prior to being transported into or within the state and placed into state waters. All equipment used in designated infested waters, shall be inspected by the Permittee or their authorized agent and adequately decontaminated prior to being transported from the worksite. The DNR is available to train inspectors and/or assist in these inspections. For more information refer to the "Best Practices for Preventing the Spread of Aquatic Invasive Species" at http://files.dnr.state.mn.us/publications/ewr/invasives/ais/best_practices_for_prevention_ais.pdf. Contact your regional Invasive Species Specialist for assistance at www.mndnr.gov/invasives/contacts.html. A list of designated infested waters is available at www.mndnr.gov/invasives/ais/infested.html. A list of prohibited invasive species is available at www.mndnr.gov/invasives/laws.html#prohibited.

CONSTRUCTION DEWATERING - GENERAL: All construction dewatering in excess of 10,000 gallons per day or one million gallons per year must be authorized by a separate water appropriation permit. All worksite discharge water must be treated for sediment reduction prior to return to the surface water. Water from designated infested waters shall not be diverted to other waters, transported on a public road, or transported or appropriated off property riparian to infested waters without a DNR permit specifically for this use. All equipment in contact with infested waters must be decontaminated upon leaving the site.

EROSION AND SEDIMENT CONTROL: In all cases, methods that have been determined to be the most effective and practical means of preventing or reducing sediment from leaving the worksite shall be installed in areas that slope to the water and on worksite areas that have the potential for direct discharge due to pumping or draining of areas from within the worksite (e.g., coffer dams, temporary ponds, stormwater inlets). These methods, such as mulches, erosion control blankets, temporary coverings, silt fence, silt curtains or barriers, vegetation preservation, redundant methods, isolation of flow, or other engineering practices, shall be installed concurrently or within 24 hours after the start of the project, and will be maintained for the duration of the project in order to prevent sediment from leaving the worksite. DNR requirements may be waived in writing by the authorized DNR staff based on site conditions, expected weather conditions, or project completion timelines.

CONDITIONS continued on next page...

GENERAL PERMIT CONDITIONS (*Continued from previous page*)

EXCAVATED MATERIALS - FLOODPLAIN CONCERN: Excavated material shall not be permanently placed within community designated floodplain areas or shoreland areas, unless all necessary local permits and approvals have been obtained.

AQUATIC PLANT MANAGEMENT: For projects where vegetation is placed waterward of the ordinary high water level, a separate Aquatic Plant Management (APM) permit is needed from the DNR Regional APM Specialist. See contact list at: http://www.dnr.state.mn.us/apm/index.html. A permit shall be obtained (no fee required) for each site in order to monitor plant source, species, and planting location. Vegetation must be appropriate for the site and free of invasive species. This condition does not apply when only woody vegetation is used, such as willow and dogwood.

APPLICABLE PROJECTS: A project not meeting applicable conditions of this permit or a project the DNR identifies as having the potential for significant resource impacts, is not authorized herein. Rather, such projects will require an individual DNR permit application.

ENVIRONMENTAL REVIEW: If the project proposal is part of a project that requires mandatory environmental review pursuant to MN Environmental Quality Board rules, then the permit is not valid until environmental review is completed.

RETAINING WALLS: Retaining walls are generally discouraged because their impact on the near-shore aquatic environment can be severe and they restrict wildlife movement, however, they may be permitted if the following conditions are met: a. Existing or expected erosion problems shall preclude the use of riprap shore protection with a finished slope of 2:1 (horizontal to vertical) or more gentle, due to steep banks, nearby structures or other extenuating circumstances; or there shall be a demonstrated need for direct shoreland docking. b. Design shall be consistent with existing uses in the area. Examples are: riverfront commercial-industrial areas having existing structures of this nature, dense residential areas where similar retaining walls are common, or where barges are utilized to carry equipment and supplies. c. Adequate engineering studies shall be performed on foundation conditions, tiebacks, internal drainage, construction materials, and protection against flanking. d. The facility shall not be an aesthetic intrusion upon the area and is consistent with all applicable local, state, and federal management plans and programs for the water body. e. Encroachment below the ordinary high water elevation shall be limited to the absolute minimum necessary for construction.

ICE RIDGE REMOVAL: Ice ridge removal projects must meet the DNR "no permit required" conditions for ice ridge removal specified in Minn. Rules part 6115.0215, Subpart 4. If not, a DNR Individual permit is required as District rules do not address this category of project.

HYDROLOGIC / HYDRAULIC DATA REPORTING :: Unless waived by the DNR Area Hydrologist, hydrologic modeling to show the impacts of a bridge or culvert constructed in a Public Water to the 100-year flood elevation is required . Additional modeling may also be required for temporary fill or temporary structures required during demolition or construction. Calculations showing calculated velocities through the structures at 2-year peak flows may also be required.

FISHERY PROTECTION - EXCLUSION DATES: No activity affecting the bed of the protected water may be conducted between March 15 and April 15 on watercourses, or between April 1 and June 30 on all other waterbodies, to minimize impacts on fish spawning and migration. If work during this time is essential, it shall be done only upon written approval of the Area Fisheries Manager. See contact list at: http://files.dnr.state.mn.us/fisheries/management/dnr_fisheries_managers.pdf Should work begin elsewhere in the project area within these dates, all exposed soils that are within 200 feet of Public Waters and drain to those waters must complete erosion control measures within 24 hours of its disturbance to prevent sediment from entering Public Waters.

REPORTING: The Riley-Purgatory-Bluff Creek Watershed District shall submit annually or as requested a summary report of the projects authorized under this General Permit to the Area Hydrologist.

CONSTRUCTION AIDS: No construction is allowed of temporary channel diversions or placement of fill for temporary work pads, bypass roads, access roads, or coffer dams to aid in the construction of any authorized structure unless approved in writing by the Area Hydrologist prior to beginning work .

FISH PASSAGE: Bridges, culverts and other crossings shall provide for fish movement unless the structure is intended to impede rough fish movement or the stream has negligible fisheries value as determined by the DNR Area Hydrologist in consultation with the Area Fisheries Manager. The accepted practices for achieving these conditions include: Where possible a single culvert or bridge shall span the natural bankfull width adequate to allow for debris and sediment transport rates to closely resemble those of upstream and downstream conditions. A single culvert shall be recessed in order to pass bedload and sediment load. Additional culvert inverts should be set at a higher elevation. All culverts should match the alignment and slope of the natural stream channel, and extend through the toe of the road side slope. "Where

CONDITIONS continued on next page...

GENERAL PERMIT CONDITIONS (*Continued from previous page*)

possible" means that other conditions may exist and could take precedence, such as unsuitable substrate, natural slope and background velocities, bedrock, flood control, 100 year flood elevations, wetland/lake level control elevations, local ditch elevations, and other adjacent features. Rock Rapids or other structures may be used to retrofit crossings to mimic natural conditions.

PHOTOS AND AS-BUILTS: Upon completion of the authorized work, the permittee may be required to submit a copy of established benchmarks, representative photographs, and may be required to provide as-built surveys of Public Watercourse crossing changes.

EXCAVATION OF PUBLIC WATERS: Excavation of Public Waters is authorized by this permit only when the proposed excavation is consistent with Minnesota Rules 6115.0200 and 6115.0201.

REMOVAL OF STRUCTURES: Removal of structures from public waters is authorized by this permit when the proposed removal is consistent with Minnesota Rules 6115.0211 subp. 8.

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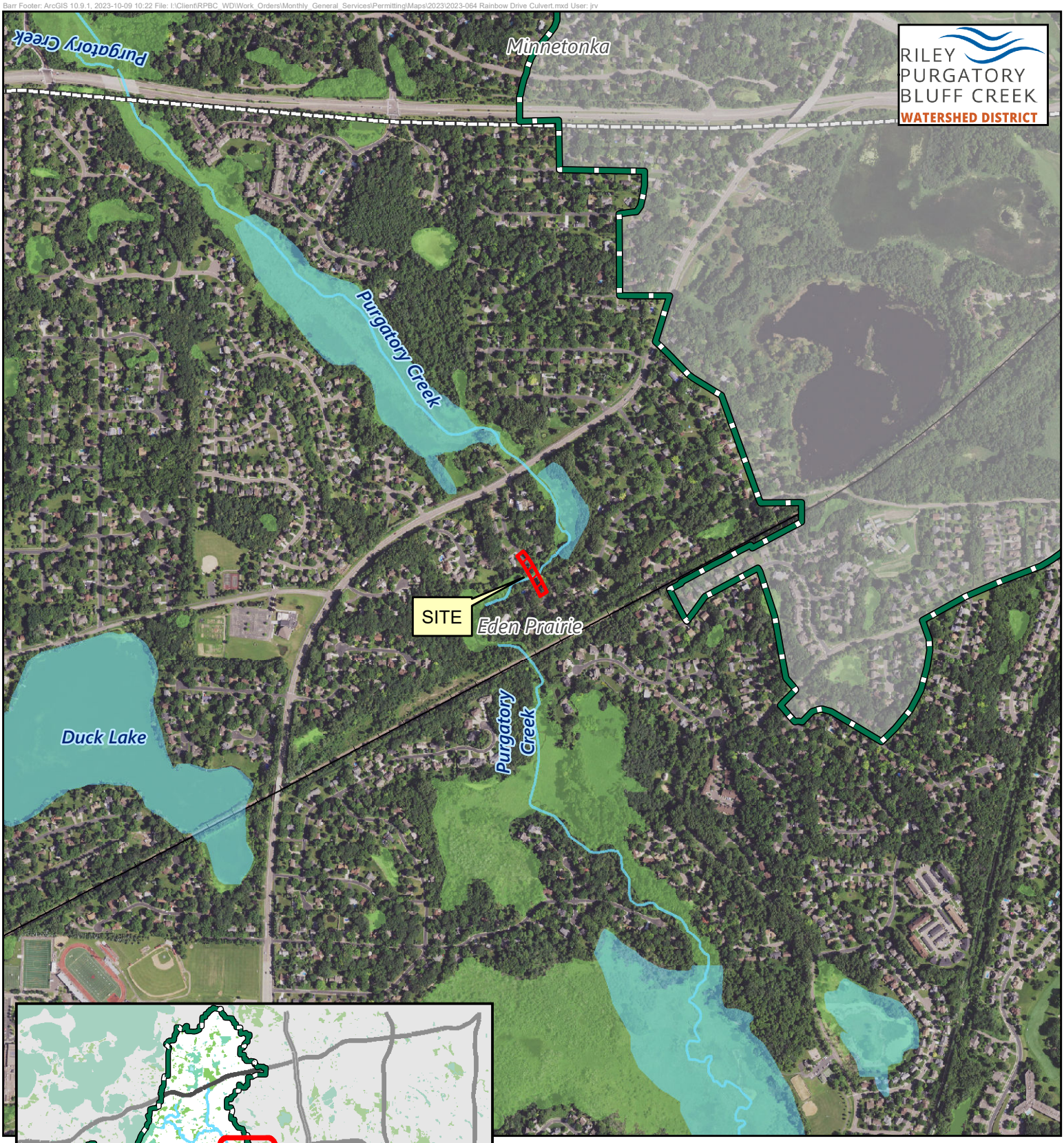
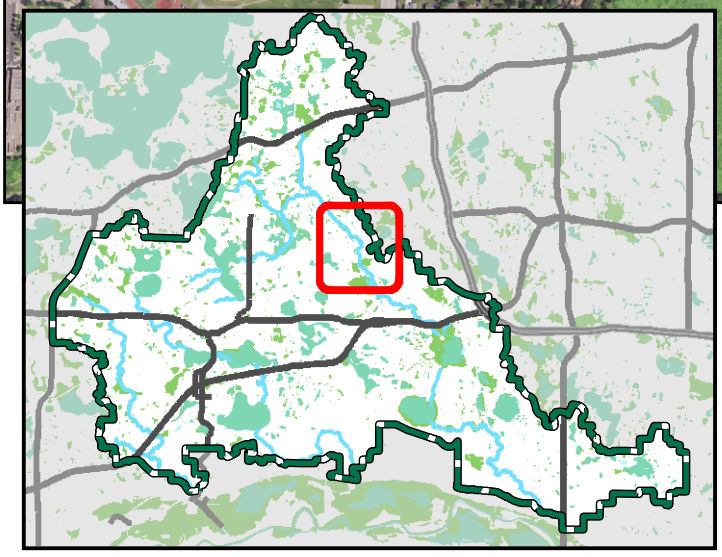
cc: John Gleason, EWR District Manager





Feet

0 1,000

Permit Location Map

RAINBOW DRIVE CULVERT
Permit 2023-064
Riley Purgatory Bluff Creek
Watershed District

CITY OF EDEN PRAIRIE

HENNEPIN COUNTY, MINNESOTA

PLANS FOR: BOX CULVERT REPLACEMENT PURGATORY CREEK AND RAINBOW DRIVE

RAINBOW DRIVE BOX CULVERT, BRIDGE NO. 27J82

CITY PROJECT NO. 23811

PLAN SYMBOLS

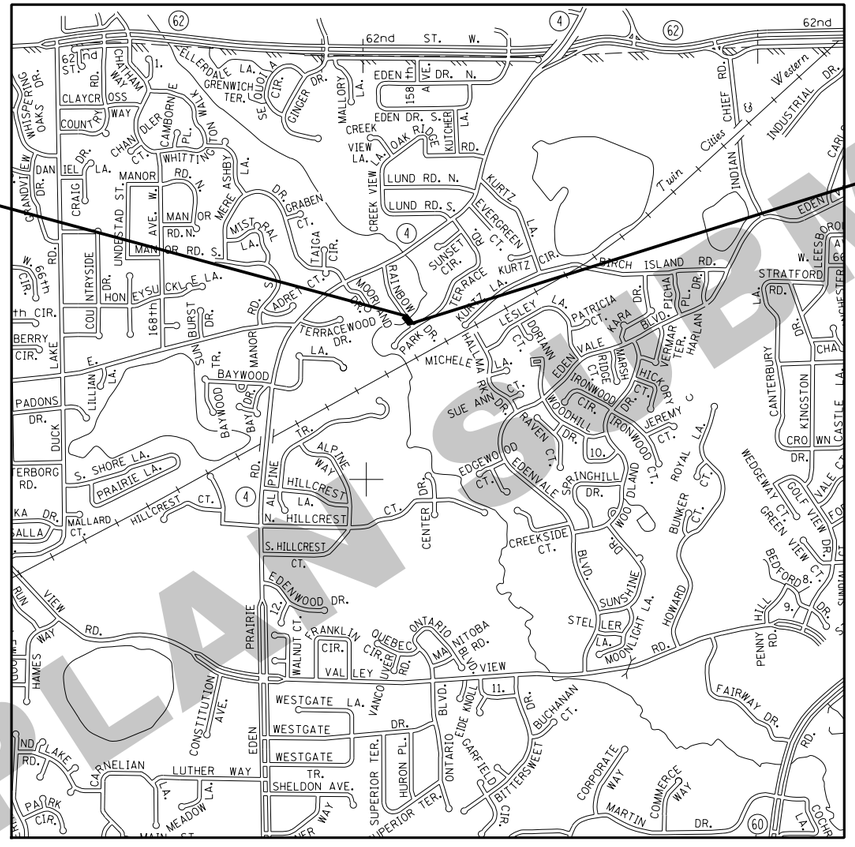
STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
CONC. RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY LINE
RIVER OR CREEK (NAME)
DRY RUN
DRAINAGE DITCH (SIZE)
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
MAIL BOX (MB)
SPRINGS
MARSH
TIMBER / ORCHARD / BRUSH / NURSERY (TIMBER)
CATCH BASIN (C.B.)
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) (1-S-F)
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER ON POWER POLES / ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN (G)
WATER MAIN (W)
CONDUIT
TELEPHONE CABLE IN CONDUIT (T)
ELECTRIC CABLE IN CONDUIT (P)
TELEPHONE MANHOLE (T)
ELECTRIC MANHOLE (P)
BURIED TELEPHONE CABLE (T-BUR)
BURIED ELECTRIC CABLE (P-BUR)
AERIAL TELEPHONE CABLE
SEWER, (SANITARY)
SEWER, (STORM)
SEWER MANHOLE
HANDHOLE (HH)

BEGIN C.P. 23811
RAINBOW DR STA. 1+00.0

END C.P. 23811
RAINBOW DR STA. 2+50.0



SCALE
INDEX MAP 2000'

DESIGN DESIGNATION FOR: RAINBOW DRIVE

R-VALUE	XX
ADT (Current Year) 20XX =	XX,XXX
ADT (Future Year) 20XX =	X,XXX (YEAR)
PAVEMENT DESIGN	XX TON
FUNCTIONAL CLASSIFICATION	LOCAL STREET
NO. OF TRAFFIC LANES	2
NO. OF PARKING LANES	
ESALS (20)	XXX,XXX (X YRS.)
Design Speed	25 MPH
Based on Sight Distance	STOPPING
Height of eye / Height of Object	3.5' / 2.0'
Design Speed not achieved at:	

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

PROJECT LOCATION
COUNTY : HENNEPIN
DISTRICT : METRO

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE "SUPPLEMENTAL SPECIFICATIONS" DATED SEPTEMBER 2022 SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

CITY OF EDEN PRAIRIE STANDARD SPECIFICATION FOR UTILITY AND STREET CONSTRUCTION 2022.

INDEX

THIS PLAN CONTAINS 28 SHEETS

BRIDGE INDEX

THIS BRIDGE PLAN CONTAINS 10 SHEETS

SRF

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE _____

DATE XX/XX/XX LIC. NO. XXXXXX PRINT NAME XXX

RECOMMENDED FOR APPROVAL ..... 20 .....
CITY ENGINEER, CITY OF (CITY)

RECOMMENDED FOR APPROVAL ..... 20 .....
(COUNTY) COUNTY ENGINEER

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

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NOTES	ITEM NO.	ITEM DESCRIPTION	UNIT	PROJECT TOTAL CP 23811 ESTIMATED QUANTITY
	2021.501	MOBILIZATION	LUMP SUM	1
	2101.502	CLEARING	EACH	3
	2101.502	GRUBBING	EACH	3
	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT	60
	2104.503	REMOVE PIPE CULVERTS	LIN FT	50
	2104.503	REMOVE BOX CULVERT	LIN FT	100
(1)	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	460
	2106.507	EXCAVATION - COMMON (P)	CU YD	133
	2106.507	EXCAVATION - SUBGRADE (P)	CU YD	254
	2106.507	SELECT GRANULAR EMBANKMENT (CV) (P)	CU YD	876
	2106.507	COMMON EMBANKMENT (CV)	CU YD	63
	2108.504	GEOTEXTILE FABRIC TYPE 5	SQ YD	280
	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	10
	2130.523	WATER	M GALLON	2
	2211.507	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	120
(2)	2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,C)	TON	50
(2)	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2,C)	TON	60
	2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
	2412.502	14X5 PRECAST CONCRETE BOX CULV END SECT	EACH	2
	2412.503	14X5 PRECAST CONCRETE BOX CULVERT	LIN FT	76
	2451.507	COARSE FILTER AGGREGATE (CV) (P)	CU YD	106
	2501.502	18" RC PIPE APRON	EACH	1
	2503.503	15" RC PIPE SEWER CLASS V	LIN FT	44
	2503.503	18" RC PIPE SEWER	LIN FT	26
	2506.602	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	3
	2506.602	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 2	#N/A	1
	2511.507	RANDOM RIPRAP CLASS III (P)	CU YD	75
	2531.503	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	24
(3)	2531.603	CONCRETE CURB & GUTTER - MOUNTABLE	LIN FT	276
	2554.502	GUIDE POST TYPE B	EACH	1
(4)	2563.601	TRAFFIC CONTROL	LUMP SUM	1
	2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1
	2573.503	SILT FENCE, TYPE HI	LIN FT	173
	2573.503	SILT FENCE, TYPE MS	LIN FT	178
	2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER	LIN FT	43
	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	LIN FT	69
	2573.601	TEMPORARY STREAM DIVERSION SYSTEM	LUMP SUM	1
	2575.501	TURF ESTABLISHMENT	LUMP SUM	1

NOTES

(P) DENOTES PLAN QUANTITY.

(1) INCLUDES BITUMINOUS CURB REMOVAL.

(2) BITUMINOUS QUANTITIES BASED ON UNIT WEIGHT OF 113 POUNDS PER SQUARE YARD INCH.

(3) SEE EDEN PRAIRIE STANDARD DETAIL R-9 FOR DIMENSIONS.

(4) INCLUDES ALL ITEMS FOR TRAFFIC CONTROL DETOURS, STAGES, AND OTHER ITEMS AS DEEMED NECESSARY FOR TRAFFIC CONTROL BY THE ENGINEER.

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

STANDARD PLATES

PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3133D	RIPRAP AT RCP OUTLETS
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
7065C	BITUMINOUS CURB

TURF ESTABLISHMENT AND EROSION CONTROL TABULATIONS

NOTES	ITEM NO.	ITEM DESCRIPTION	UNIT	PROJECT TOTAL
	2105.601	TEMPORARY STREAM DIVERSION	LS	1
	2573.502	STORM DRAIN INLET PROTECTION	EACH	4
	2573.503	SILT FENCE, TYPE HI	LIN FT	173
	2573.503	SILT FENCE, TYPE MS	LIN FT	178
	2573.503	FLOATATION SILT CURTAIN, TYPE STILL WATER	LIN FT	43
	2573.503	SEDIMENT CONTROL LOG, TYPE WOOD FIBER	LIN FT	69
	2574.508	FERTILIZER TYPE 3	LB	10
	2574.508	FERTILIZER TYPE 4	LB	13
	2574.575	SUBSOILING	AC	0.11
	2574.578	SOIL BED PREP	AC	0.11
	2575.501	SEEDING	AC	0.11
	2575.502	SEED MIXTURE 35-221	LB	1
	2575.502	SEED MIXTURE 33-261	LB	1
	2575.502	SEED MIXTURE 25-151	LB	10
	2575.545	WEED SPRAYING	AC	0.5
	2575.547	WEED SPRAY MIXTURE	GAL	0.5
	2575.604	ROLLED EROSION PREVENTION CATEGORY 20	SY	540
	2753.501	EROSION CONTROL SUPERVISOR	EA	1

EARTHWORK TABULATION A

STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)	
	COMMON	SUBGRADE	COMMON	SELECT GRANULAR
RAINBOW DRIVE	CU YD	CU YD	CU YD	CU YD
1+00.00				
1+50.00	48	85	19	85
1+61.00	11	19	6	19
1+88.00	24	45	14	46
2+00.00	9	20	6	20
2+50.00	41	85	18	85
TOTAL	**133**	**254**	**63**	**255**

EARTHWORK SUMMARY B

RAINBOW DRIVE	EXCAVATION TOTALS (EV)			EMBANKMENT TOTALS (CV)	
	COMMON	SUBGRADE	STRUCTURE	COMMON	SELECT GRANULAR
	CU YD	CU YD	LUMP SUM	CU YD	CU YD
CP 23811					
RAINBOW DRIVE (ROADWAY)	133	254		63	255
BOX CULVERT (STRUCTURE)			1		621
PROJECT TOTALS	**133**	**254**	**1**	**63**	**876**

NOTES:

NO	DATE	BY	CKD	APPR	REVISION
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

DRAWN BY DRAWN-1
DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

STATEMENT OF ESTIMATED QUANTITIES, STANDARD PLATES
RAINBOW DRIVE CULVERT REPLACEMENT
EARTHWORK SUMMARY. AND TABULATIONS

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CONSTRUCTION AND SOILS NOTES

GRADING, BASE AND SURFACE

1. STRIP SOD AND TOPSOIL FROM AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE TOPSOIL. FOR ESTIMATING PURPOSES, THE DEPTH OF TOPSOIL AVAILABLE IS CONSIDERED TO BE 6".

2. ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE EXCAVATION - COMMON. ALL SLOPE DRESSING SHALL BE QUANTIFIED AS COMMON EMBANKMENT.

3. UNSUITABLE SOILS ARE DEFINED AS SOILS WHICH DO NOT MEET OR ARE NOT MANUFACTURED TO MEET "SELECT GRADING MATERIAL". UNSUITABLE SOILS ARE NOT PERMISSIBLE FOR EMBANKMENT USE.

4. COMPACTION OF THE GRADING PORTIONS/AGGREGATE BASE LAYER SHALL BE OBTAINED IN ACCORDANCE WITH THE "PENETRATION INDEX COMPACTION METHOD". THE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE (2211) AGGREGATE BASE SPECIFICATION, INCLUDED IN THE SPECIAL PROVISIONS. THIS WOULD INCLUDE ANY AREAS WHERE CRUSHED CONCRETE OR SALVAGED ASPHALT MAY BE USED FOR AGGREGATE BASE.

5. THE PITCH OF GUTTER, HEIGHT OF THE CURB, AND OTHER MINOR CHANGES MAY BE ADJUSTED TO MEET EXISTING CONDITIONS AT THE DISCRETION OF THE ENGINEER.

6. TEST ROLLING USING TR10, SHALL BE REQUIRED ON THIS PROJECT (INCIDENTAL).

7. THE CONTRACTOR'S PERSONNEL OR ANY OTHER PERSONNEL MAY NOT USE THE NEW ROAD SURFACE OR ROADBED FOR THE PURPOSE OF STOCKPILING AGGREGATE MATERIAL OR ANY OTHER MATERIAL FOR ANY LENGTH OF TIME DURING THE DURATION OF THE PROJECT.

8. SIDE SLOPES SHALL BE GRADED AS SHOWN IN THE PLAN TYPICAL SECTIONS AND CROSS SECTIONS.

9. PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT.

10. WHERE CONNECTING TO THE INPLACE ROADWAYS AT THE TERMINI OF PROPOSED CONSTRUCTION, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF THE NEW SURFACING, WHICHEVER IS DEEPER, THEN 1V:2OH TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION, UNLESS OTHERWISE NOTED.

REMOVALS

11. PROVIDE FOR THE REMOVAL AND DISPOSAL OF ANY INPLACE SURFACING, OTHER STRUCTURES OR DEBRIS THAT WOULD INTERFERE WITH CONSTRUCTION. ALL SUCH MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL EITHER BE RECYCLED TO THE EXTENT ALLOWED OR DISPOSED OF OFF THE RIGHT OF WAY IN ACCORDANCE WITH SPEC. 2104.3C.

12. THE EXISTING PAVEMENT THICKNESSES ARE ASSUMED TO BE AS FOLLOWS:

    RAINBOW DRIVE - 6.0" BITUMINOUS PAVEMENT

    THE CONTRACTOR SHALL INVESTIGATE AND MAKE THEIR OWN DETERMINATION. (INFORMATION TAKEN FROM THE PROJECT RECORD DRAWINGS).

CONSTRUCTION AND SOILS NOTES

TURF ESTABLISHMENT

13. PLACE A MINIMUM OF 6 INCHES OF TOPSOIL ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT.

14. SEEDING REQUIREMENTS ON THIS PROJECT ARE AS FOLLOWS. SEE TURF ESTABLISHMENT AND EROSION CONTROL PLANS FOR LOCATIONS. ALL ITEMS REQUIRED FOR TURF ESTABLISHMENT WILL BE PAID FOR AS TURF ESTABLISHMENT LUMP SUM.

    A. ON PERMANENT SLOPES 1:3 AND FLATTER:
       SEED MIXTURE 25-131 @ 220 LBS/AC.
       FERTILIZER TYPE 3, ANALYSIS 22-5-10 @ 350 LBS/AC, OR EQUIVALENT, ON ALL AREAS TO BE SEEDED.
       HYDRAULIC STABILIZED FIBER MATRIX @ 3000 LBS/AC.

    B. ON PERMANENT SLOPES 1:3 OR STEEPER:
       SEED MIXTURE 35-221 @ 36.5 LBS/AC.
       FERTILIZER TYPE 4, ANALYSIS 17-10-7 @ 150 LBS/AC.
       ROLLED EROSION PREVENTION CATEGORY 25.
       HYDRAULIC STABILIZED FIBER MATRIX @ 3000 LBS/AC.

MISCELLANEOUS

15. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCOMODATING AND MAINTAINING PEDESTRIAN MOVEMENTS THROUGHOUT CONSTRUCTION. THIS SHALL BE INCIDENTAL.

UTILITIES

17. THE CONTRACTOR IS HEREBY REMINDED OF THEIR RESPONSIBILITY UNDER STATE LAW TO CONTACT ALL UTILITIES WHICH MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE CALL IN ACCORDANCE WITH MN STATUTE.

18. UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE, AND TWO WEEKS PRIOR TO EACH STAGE OF CONSTRUCTION.

19. RELOCATION OF EXISTING UTILITIES WILL BE REQUIRED AS A RESULT OF THIS PROJECT'S CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY POTENTIAL UTILITY CONFLICTS, VERIFY UTILITY CONFLICTS AND COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES TO AVOID UNNECESSARY DELAYS. NO COMPENSATION WILL BE MADE FOR DELAYS ASSOCIATED WITH THE CONTRACTOR'S FAILURE TO ADEQUATELY COORDINATE WITH UTILITY COMPANIES.

20. ALL PRIVATELY OWNED UTILITY MANHOLES TO BE RESET BY OTHERS.

21. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS FOR EXISTING MANHOLES PRIOR TO ANY STORM SEWER CONSTRUCTION.

22. WHEN REMOVING PIPE DRAINS, THE CONTRACTOR SHALL IDENTIFY ANY PIPE CONNECTIONS NOT SHOWN IN THE PLANS FOR PERPETUATION OF EXISTING DRAINS, AS DIRECTED BY THE ENGINEER. THIS SHALL BE INCIDENTAL.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

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DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

CONSTRUCTION AND SOILS NOTES
RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 3 OF 28

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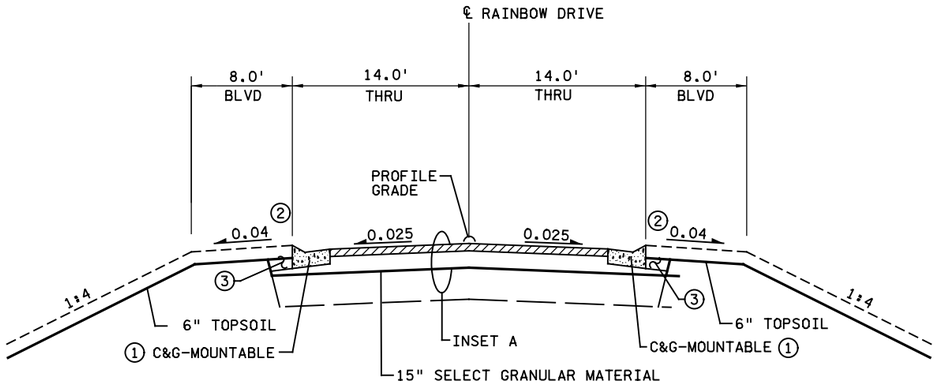
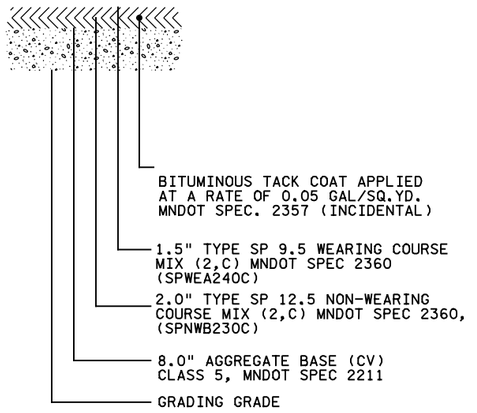


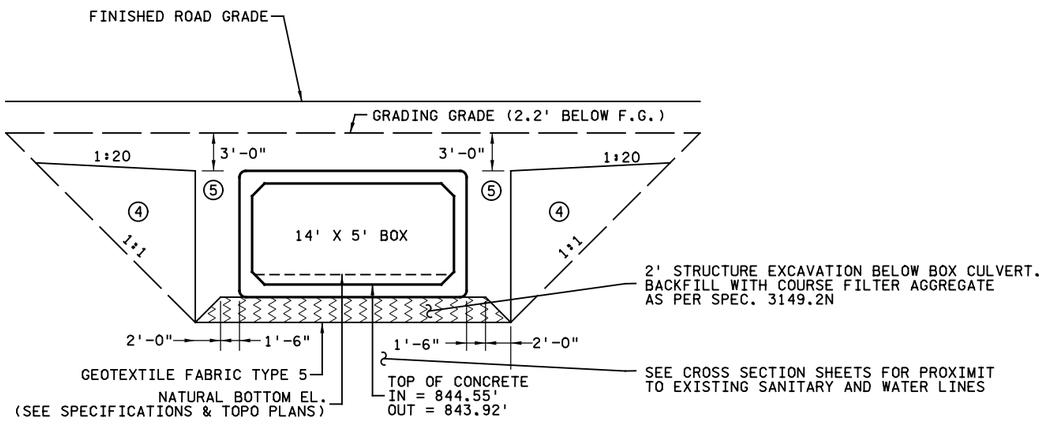
RAINBOW DRIVE

STA 1+00.0 TO STA 2+50.0



INSET A

RESIDENTIAL ROAD



BOX CULVERT

NOTES:

1. MOUNTABLE CURB & GUTTER. SEE EDEN PRAIRIE DETAIL NO. R-9. TRANSITION TO B618 C&G AT THE DRAINAGE STRUCTURES. CURB HEIGHT AT B618 CASTING LOCATIONS MUST BE TRANSITIONED TO 6 INCH HEIGHT. SEE DRAINAGE DETAIL SHEETS.
2. 1.5' OBSTACLE FREE CLEAR ZONE FROM FACE OF CURB
3. BACKFILL WITH SELECT GRADING MATERIAL
4. BACKFILL WITH SUITABLE GRADING MATERIAL
5. STRUCTURAL EXCAVATION LIMITS AS PER SPEC 2451.4A

GENERAL NOTES:

ALL SLOPES ARE IN FT./FT.

ALL SLOPES LISTED AS X:X ARE IN THE RISE TO RUN FORMAT.

ALL FILL MATERIAL SHALL BE SUITABLE GRADING MATERIAL UNLESS OTHERWISE NOTED.

DIMENSIONS TO BITUMINOUS CURB ARE TO BACK OF CURB

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: Z. HEIMER

Date _____ License # 58755

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CITY OF EDEN PRAIRIE

TYPICAL SECTIONS

RAINBOW DRIVE CULVERT REPLACEMENT

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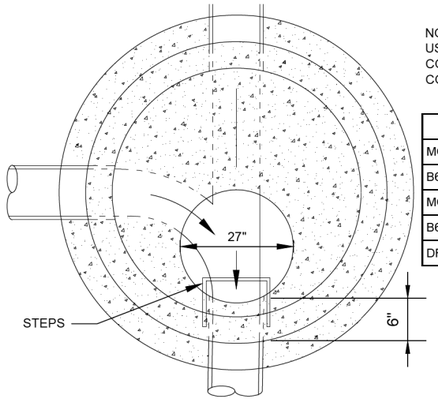
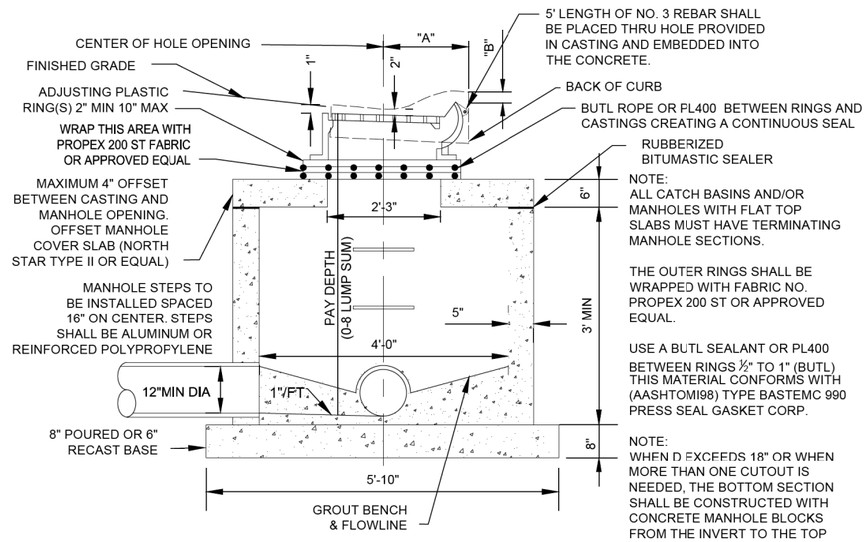


NOTE:
USE MANHOLE BLOCKS FOR COMPLETE STRUCTURE WHEN COVER IS MINIMAL

C&G TYPE	"A"	"B"	NEENAH RIM NO.
MOUNTABLE	1'-10"	2-1/2"	3250-A
B6-18	1'-10"	3-1/4"	3250-I
MOUNTABLE	12.5"	0	3501-T
B6-18	12"	0	3067*
DRWY./APRON	1'-10"	0	3250-A TYPE C GRA.

* HIGH INTAKE GRATE FOR STREET GRADES $\geq$3%.

NOTE:
SQUARE OR RECTANGULAR CASTINGS SHALL HAVE SQUARE OR RECTANGULAR PLASTIC RINGS. A SQUARE OR RECTANGULAR OPENING WILL BE REQUIRED ON STRUCTURE FLAT TOP.



NOTE:
ALL CATCH BASINS AND/OR MANHOLES WITH FLAT TOP SLABS MUST HAVE TERMINATING MANHOLE SECTIONS.

THE OUTER RINGS SHALL BE WRAPPED WITH FABRIC NO. PROPEX 200 ST OR APPROVED EQUAL.

USE A BUTL SEALANT OR PL400 BETWEEN RINGS ½" TO 1" (BUTL) THIS MATERIAL CONFORMS WITH (AASHTOMI98) TYPE BASTEMC 990 PRESS SEAL GASKET CORP.

NOTE:
WHEN D EXCEEDS 18" OR WHEN MORE THAN ONE CUTOUT IS NEEDED, THE BOTTOM SECTION SHALL BE CONSTRUCTED WITH CONCRETE MANHOLE BLOCKS FROM THE INVERT TO THE TOP OF OUTLET PIPE.

NOTE:
ALL GROUT USED FOR BOTTOM OF STRUCTURE OR CONNECTIONS OF RCP TO MANHOLE SHALL BE AIR ENTRAINED MEETING ASTM C270 WITH MINIMUM OF 8% AIR CONTENT

REV 03/15/2022

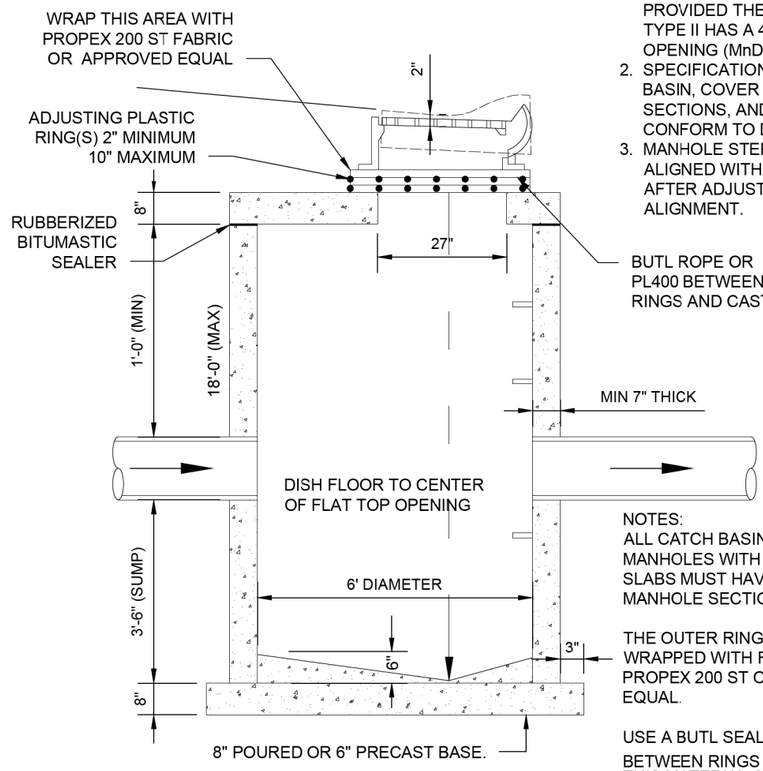
EDEN PRAIRIE LIVE • WORK • DREAM

STANDARD CATCH BASIN

DETAIL NO. **S-5**

CITY OF EDEN PRAIRIE
DEPARTMENT OF ENGINEERING

NOTES:
1. ECCENTRIC CONE SECTION MAY BE USED ABOVE THE FLAT SLAB IN DEEP STRUCTURES TO AVOID MORE THAN 4 ADJUSTING RINGS, PROVIDED THE 86" FLAT SLAB TYPE II HAS A 48" DIA. HOLE OPENING (MnDOT 4019E).
2. SPECIFICATIONS FOR CATCH BASIN, COVER SLAB, MANHOLE SECTIONS, AND STEPS SHALL CONFORM TO DETAIL S-5.
3. MANHOLE STEPS SHALL BE ALIGNED WITH HOLE OPENING AFTER ADJUSTMENT FOR CURB ALIGNMENT.



NOTES:
ALL CATCH BASINS AND/OR MANHOLES WITH FLAT TOP SLABS MUST HAVE TERMINATING MANHOLE SECTIONS.

THE OUTER RINGS SHALL BE WRAPPED WITH FABRIC NO. PROPEX 200 ST OR APPROVED EQUAL.

USE A BUTL SEALANT OR PL400 BETWEEN RINGS ½" TO 1" (BUTL) THIS MATERIAL CONFORMS WITH (AASHTOMI98) TYPE BASTEMC 990 PRESS SEAL GASKET CORP.

SQUARE CASTINGS SHALL HAVE SQUARE RINGS. THE FLAT TOP SHALL HAVE A SQUARE OPENING.

REV 03/01/2013

EDEN PRAIRIE LIVE • WORK • DREAM

SUMP MANHOLE OR CATCH BASIN

DETAIL NO. **S-7**

CITY OF EDEN PRAIRIE
DEPARTMENT OF ENGINEERING

NO	DATE	BY	CKD	APPR	REVISION

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CITY PROJECT NO. 23811

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CITY OF EDEN PRAIRIE
MISCELLANEOUS DETAILS
RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 5 OF 28

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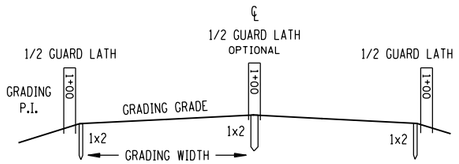
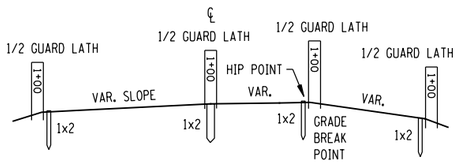
BLUE TOPS

NORMAL SECTION

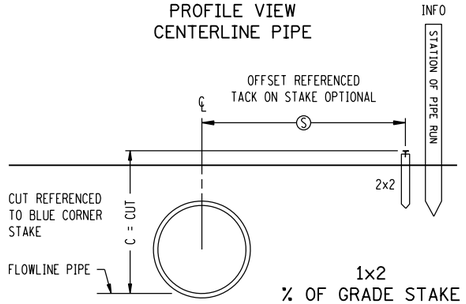


TRANSITION SECTION

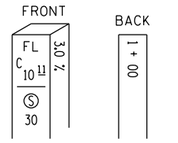


PIPE STAKING

PROFILE VIEW
CENTERLINE PIPE

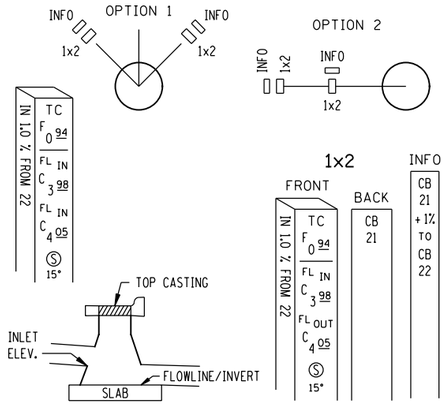


1x2
% OF GRADE STAKE



CATCH BASIN OR MANHOLE (CB/MH)

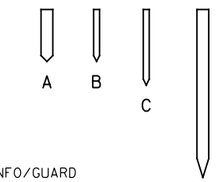
TOP VIEWS



FLOWLINE/INVERT + 0.7'

STANDARD STAKES

TYPES:
REFERENCE (REF)
INFORMATIONAL (INFO)
VISIBILITY (VIS)
GUARD (GUARD)



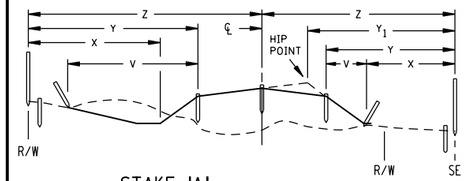
SIZES:
A = 2" X 2" X VAR. REF/INFO/GUARD
B = 1" X 2" X VAR. REF/INFO/GUARD
C = 1" X 2" X VAR. REF
D = LATH INFO/VIS/GUARD
1x2 OR LATH = INFO STAKES

ABBREVIATIONS

BBL = BARREL (PIPE)
B.C. = BACK CURB
C & G = CURB & GUTTER
C = CUT
CAP = CORR. ALUM. PIPE
CB = CATCH BASIN
℄ = CENTERLINE
CL & GR = CLEAR & GRUB
CMP = CORR. METAL PIPE
COR = CORNER
CR = CROWN
CSP = CORR. STEEL PIPE
℄ = DITCH CUT
D.E. = DRAINAGE EASEMENT
DI = DROP INLET
EB = EASTBOUND
E.M. = EDGE BITUMINOUS MAT
E.S. = EDGE CONCRETE SLAB
F = FILL
FF = FRONT FACE
FL = FLOW LINE
FL IN = FLOWLINE INLET
FL OUT = FLOWLINE OUTLET
GR = GRADE
GW = GRADING WIDTH
HH = HANDHOLE
HP = HIP POINT
LT = LEFT
MH = MANHOLE
NB = NORTHBOUND
Ⓢ = OFFSET
PAR = PARCEL
% = PERCENT GRADE
P.E. = PERM. EASEMENT
RAD = RADIUS POINT
RCP = REINF. CONC. PIPE
RP = REFERENCE POINT
RSC = REINF. SECT. CONC.
RT = RIGHT
R/W = RIGHT OF WAY
SB = SOUTHBOUND
SCP = SECT. CONC. PIPE
SH = SHOULDER
TC = TOP CASTING
OR TOP CURB
T.E. = TEMP. EASEMENT
3 :1 = SLOPE (EXAMPLE)
WB = WESTBOUND
WP = WORKING POINTS

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'A'



STAKE 'A'

FULL LATH AND HUB-STATION
DIST. TO ℄ WITH CUT/FILL TO ℄ (Z)
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y) (Y1)
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)
OFFSET TO SAFTY SLOPE
OFFSET TO HIP POINT

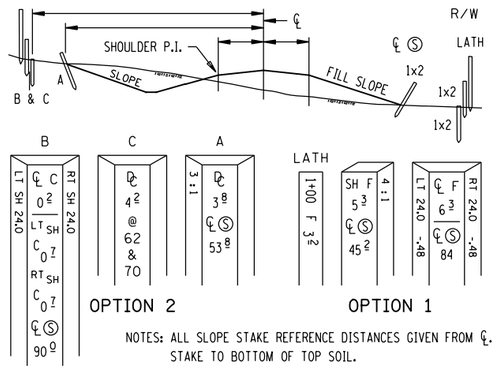
STAKE 'B'

FULL LATH
DITCH CUT/SHLD. FILL
SLOPE RATED
DISTANCE TO INSLOPE TOE (V1) OR SHOULDER (AS APPLIES) (V)

NOTE:
BLUE TOPS REQUIRED ON ℄ AND BOTH SHOULDERS AT MINIMUM
ALL CULVERTS TO BE STAKED
MINIMUM DATA TO BE PROVIDED
STAKE TO BOTTOM OF TOPSOIL

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'B'

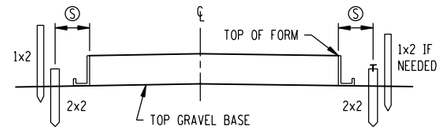


OPTION 2 OPTION 1

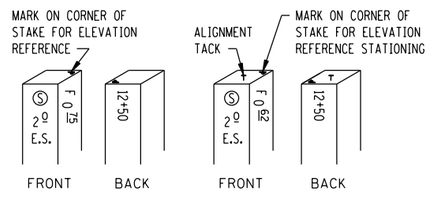
NOTES: ALL SLOPE STAKE REFERENCE DISTANCES GIVEN FROM ℄. STAKE TO BOTTOM OF TOP SOIL.

KEY STAKES: BLUE TOP SET AT R/W BOUNDARY LT. & RT. MAY BE EXCEPTIONS TO SETTING STAKE ON R/W.

CONCRETE PAVING STATIONARY FORM



OFFSET TO CONTRACTOR'S OPTION



NOTE INFORMATION ON STAKE IF NECESSARY

RECOMMENDED STAKING INTERVALS

FIGURE A

	SLOPE STAKES	SUB GRADE B.T.	CLASS MATERIAL B.T.	CONC PAVT	C & G	CL & GR LIMITS	MUCK EXC.	R/W	TEMP. EASE.
TANGENT	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
HORIZ. CURVE									
0 - 3°	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
OVER 3° -	100	50	50	25	25	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
VERT. CURVE									
'M' 100' CHORD 0 - .25	100	100	100	50	50				
'M' OVER .25	100	50	50	25	25				
TRAN.		50	50						

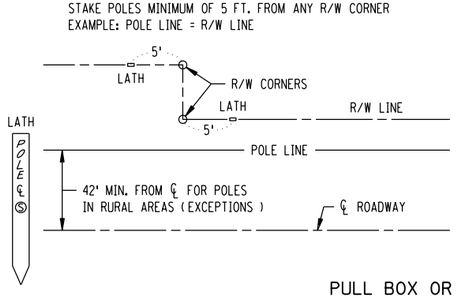
STAKING TOLERANCES (FEET)

	HORIZONTAL	VERTICAL
CONSTRUCTION LIMITS	± 1.5	
CLEARING & GRUBBING	2.0	
SLOPES STAKES	2.0	± 0.2
KEY STAKES	0.2	0.03
DRAINAGE STAKES	0.05	0.05
CURB & GUTTER	0.07	0.03
PAVING	0.05	0.03
ALIGNMENT	0.07	
UTILITY	0.10	0.05
STRUCTURAL	0.02	0.02
GUARD RAIL	0.5	
BUILDINGS	0.04	
O.H. SIGNS	0.05	0.05
MUCK EXCAVATION LIMITS	2.0	
R/W B-POINTS	0.10	
NOISE WALLS	1.0	0.5

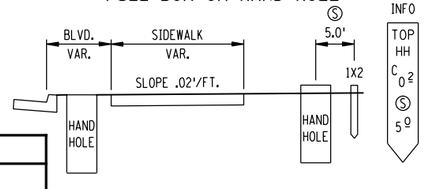
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

UTILITY (UTIL)

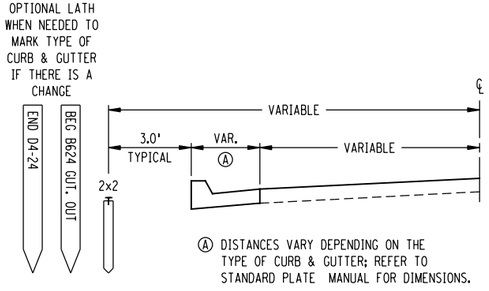
STAKE POLES MINIMUM OF 5 FT. FROM ANY R/W CORNER
EXAMPLE: POLE LINE = R/W LINE



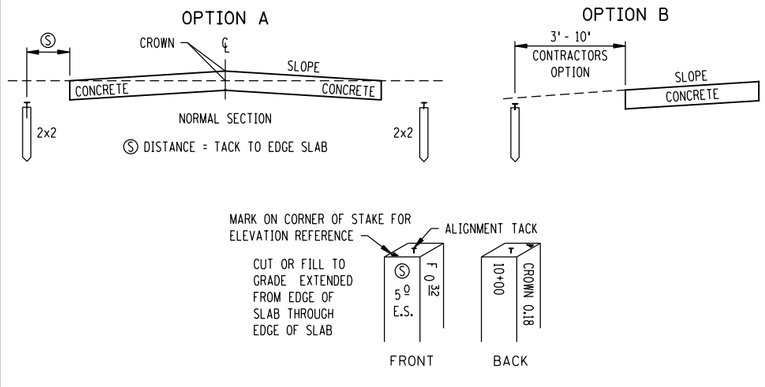
PULL BOX OR HAND HOLE



CURB & GUTTER (CURB)



CONCRETE PAVING - SLIP FORM



DISCLAIMER

THESE STAKING INFORMATION SHEETS ARE FOR INFORMATION PURPOSES ONLY. STAKING PROCEDURES VARY AND MAY BE SUBJECT TO CHANGE DURING CONSTRUCTION BY CIRCUMSTANCES AND/OR AGREEMENTS BETWEEN SURVEY CREW AND CONTRACTOR.

REVISION:

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DIRECTOR, OFFICE OF LAND MANAGEMENT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.115 | 1 OF 2

APPROVED: 8-6-2014
REVISED:

STATE DESIGN ENGINEER

C.P. 23811

STAKING INFORMATION SHEET

SHEET NO. 6 OF 28 SHEETS

12:35:50 PM
12/7/2023
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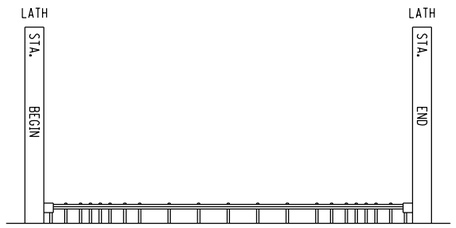
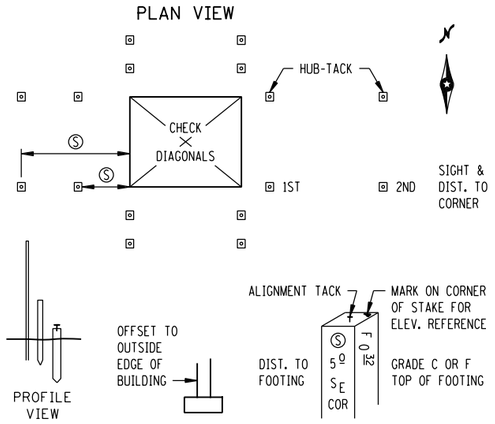
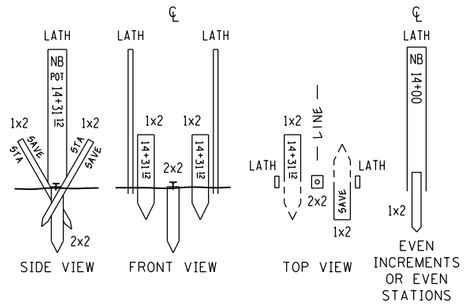
GUARDRAIL (GUARD)



BUILDING (BUILD) FOUNDATION / FOOTING



ALIGNMENT POINTS (ALIGN)



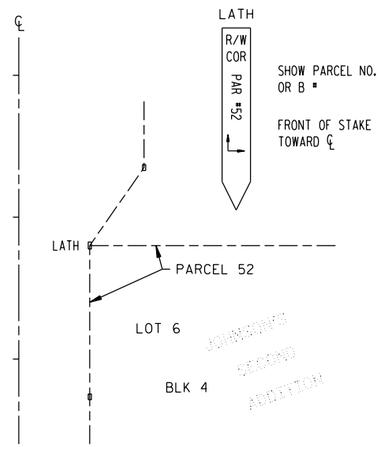
STAKE C = 2"X 2" HUB (LENGTH MAY VARY) SET AS TEMPORARY STAKE. MAY BE REPLACED BY MnDOT MARKER AFTER CONSTRUCTION IS COMPLETED.

SET AT GROUND LEVEL (TEMPORARY CONSTRUCTION STAKE).

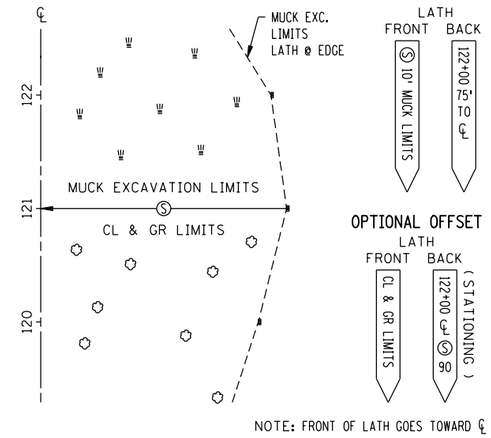
TACK SET AT ALIGNMENT POINTS.

STAKE A = GUARD STAKES SET AT ANGLE IN GROUND 6" EACH SIDE OF STAKE D, WITH STATIONING READ WHEN LOOKING UP STATION.

R/W & TEMP. EASEMENT (R/W)



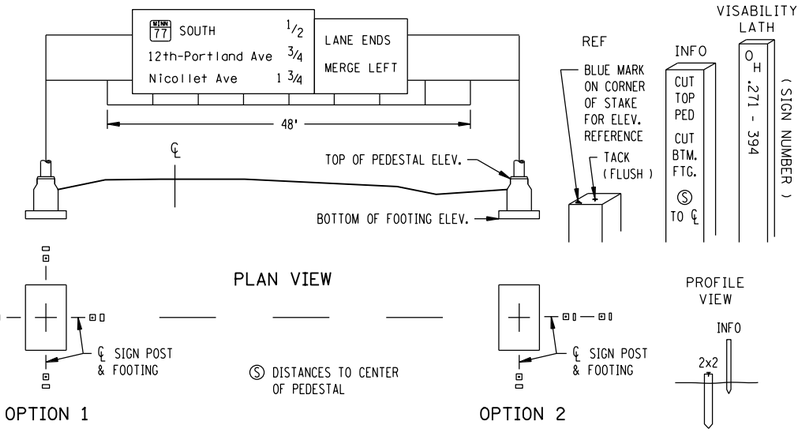
CLEAR & GRUBBING LIMITS (CLEAR) OR MUCK EXCAVATION LIMITS (MUCK)



NOTE: FRONT OF LATH GOES TOWARD ℄

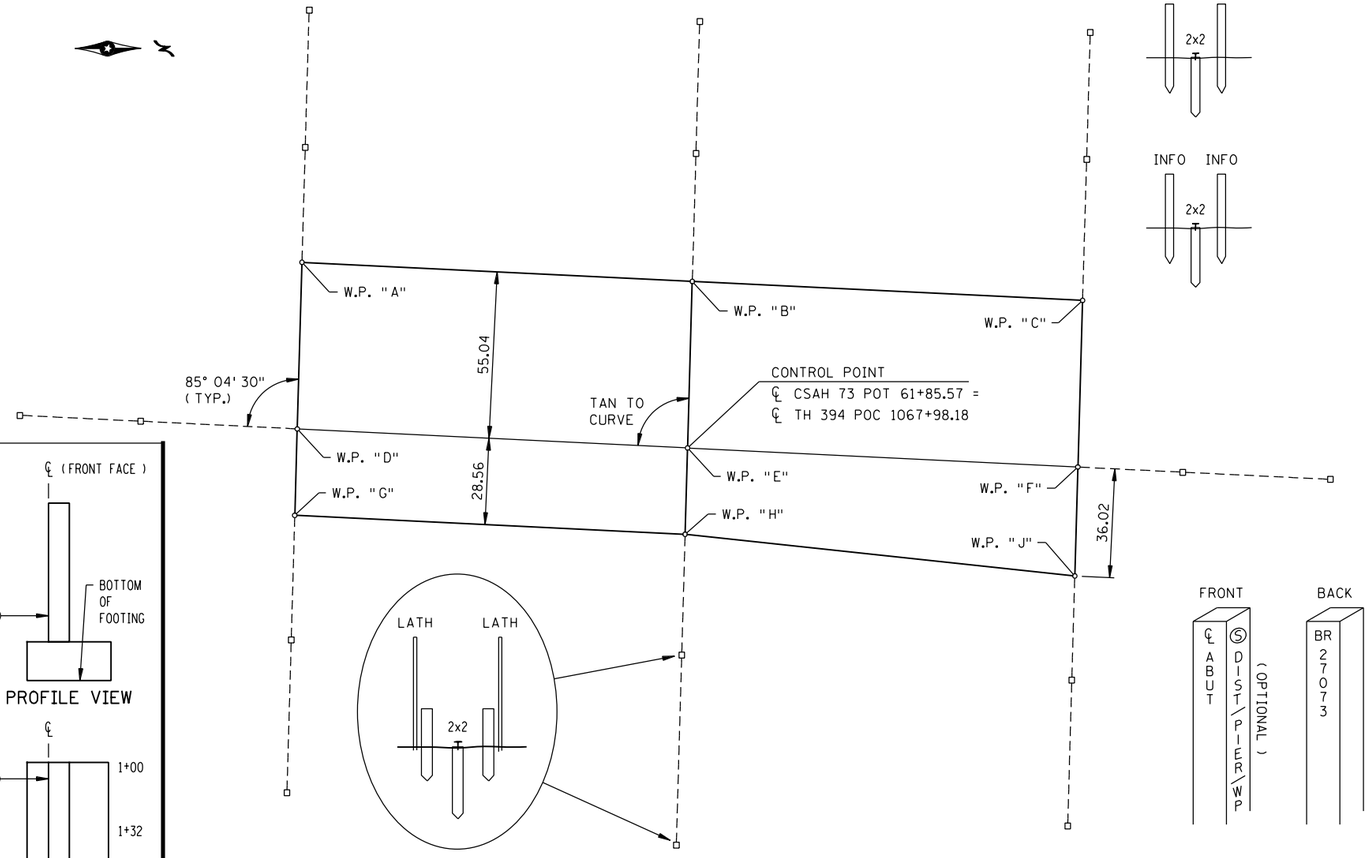
OVERHEAD SIGNS (SIGN)

PROFILE VIEW



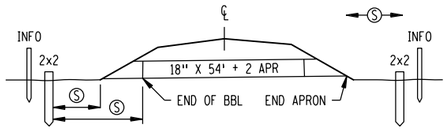
BRIDGESTAKING (BRIDGE)

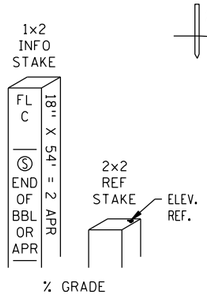
WORKING POINTS LAYOUT

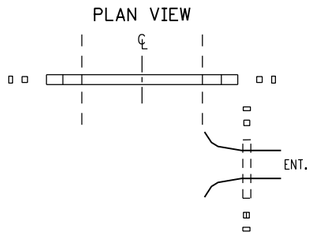


CULVERT

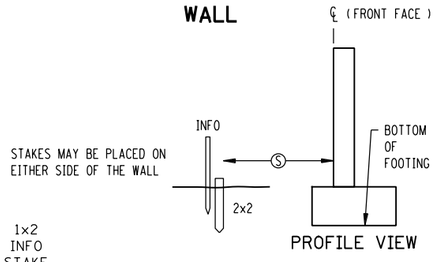
PROFILE VIEW

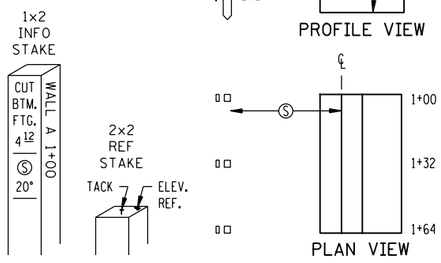






WALL





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MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.115 | 2 OF 2

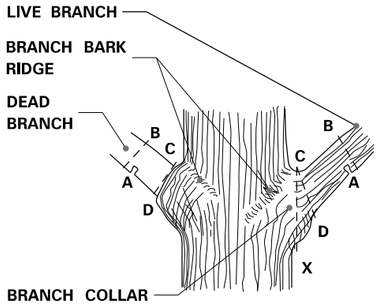
APPROVED: 8-6-2014

REVISED:

STATE DESIGN ENGINEER

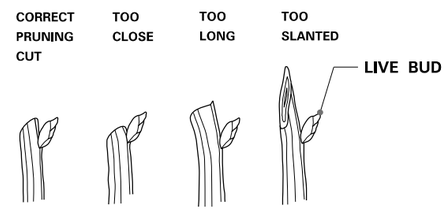
STAKING INFORMATION SHEET

C.P. 23811



BRANCHES PRUNED AT TRUNK

(SHIGO METHOD)



BRANCHES PRUNED TO LIVE BUD

STEPS TO PRUNING WITH PRUNING SAW:

1. CUT PART WAY THROUGH THE BRANCH AT POINT A.
2. CUT COMPLETELY THROUGH BRANCH FROM POINT B TO A.
3. AT BRANCH COLLAR CUT FROM POINT C TO D.

INCORRECT CUT FROM POINT C TO X (TOO CLOSE) WILL RESULT IN DISCONTINUOUS CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

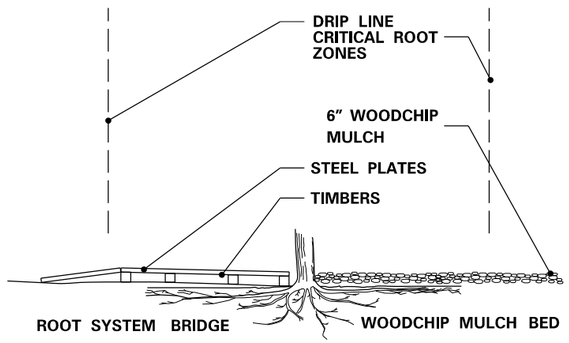
CORRECT CUT FROM POINT C TO D (LEAVING BRANCH COLLAR BUT NOT THE STUB FROM POINT B TO A) WILL RESULT IN CONTINUOUS DOUGHNUT SHAPED CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

PRUNING NOTES:

1. PRUNE USING CLEAN AND SHARP SCISSOR–TYPE PRUNER OR PRUNING SAW.
2. THE BEST TIME TO PRUNE IS LATE DORMANT SEASON OR EARLY SPRING.
3. AVOID PRUNING OAKS IN APRIL, MAY, JUNE OR JULY.
4. IF PRUNING IS NECESSARY OR IF WOUNDS OCCUR TO OAK TREES IN APRIL, MAY, JUNE OR JULY, IMMEDIATELY PAINT CUT SURFACE OR WOUND WITH LATEX PAINT OR SHELLAC.

PRUNING

(MnDOT 2571.3E.1 and 2571.3K.2.a(9))



IF CONSTRUCTION VEHICLES MUST PASS OVER ROOT ZONES, THE CONTRACTOR MUST EITHER:

1. CONSTRUCT ROOT SYSTEM BRIDGES WITH STEEL PLATE SUPPORTED ON WOOD TIMBERS PLACED RADIALLY TO THE TREE TRUNK.

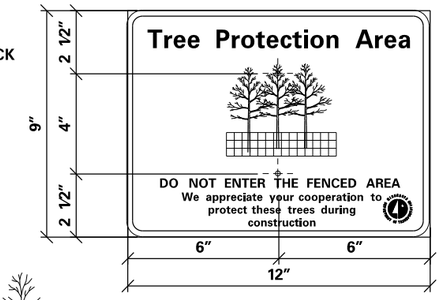
OR

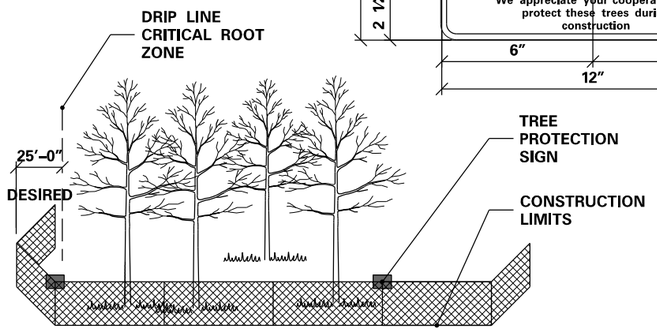
2. PLACE A 6 INCH LAYER OF WOODCHIP MULCH OVER A TYPE III GEOTEXTILE (MnDOT 3733).

OTHER VEGETATION PROTECTION MEASURES

(MnDOT 2572.3A.12)

1. FABRICATE 12" X 9" X 3⁄8" SIGN WITH 0.75" RADIUS CORNERS.
2. SIGN SHALL BE WHITE WITH BLACK LETTERING.
3. ATTACH SIGN TO POST USING 1" LENGTH WOOD SCREWS.

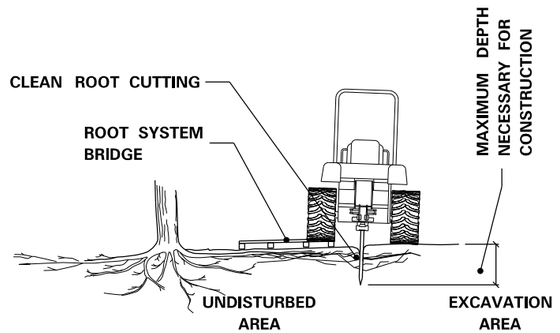




1. FURNISH AND INSTALL TEMPORARY FENCE AT THE TREE'S DRIPLINE OR CONSTRUCTION LIMITS AS SPECIFIED, PRIOR TO ANY CONSTRUCTION.
2. WHEN POSSIBLE PLACE FENCE 25 FEET BEYOND THE DRIP LINE.
3. PLACE TREE PROTECTION SIGNS ALONG FENCE AT 50' INTERVALS.

TEMPORARY FENCE

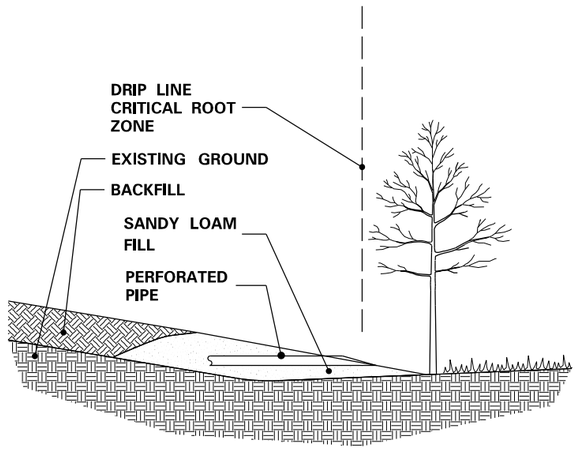
(MnDOT 2572.3A.1)



1. WHEN DESIGNATED IN THE PLAN OR DIRECTED BY THE ENGINEER, PRIOR TO EXCAVATION, ALL TREE ROOTS WILL BE CLEANLY CUT BY A VIBRATORY PLOW OR OTHER APPROVED ROOT CUTTER.
2. THE TREE ROOTS WILL BE CUT CLEANLY TO THE MINIMUM DEPTH NECESSARY FOR CONSTRUCTION.
3. IMMEDIATELY, AND CLEANLY CUT DAMAGED AND EXPOSED ROOTS.
4. ROOT ENDS EXPOSED BY EXCAVATION ACTIVITIES SHALL BE IMMEDIATELY COVERED WITH A 6" LAYER OF ADJACENT SOIL.
5. EXPOSED CUT OAK ROOTS SHALL BE IMMEDIATELY (WITHIN 5 MINUTES) TREATED WITH A WOUND DRESSING MATERIAL CONSISTING OF LATEX PAINT OR SHELLAC.

CLEAN ROOT CUTTING

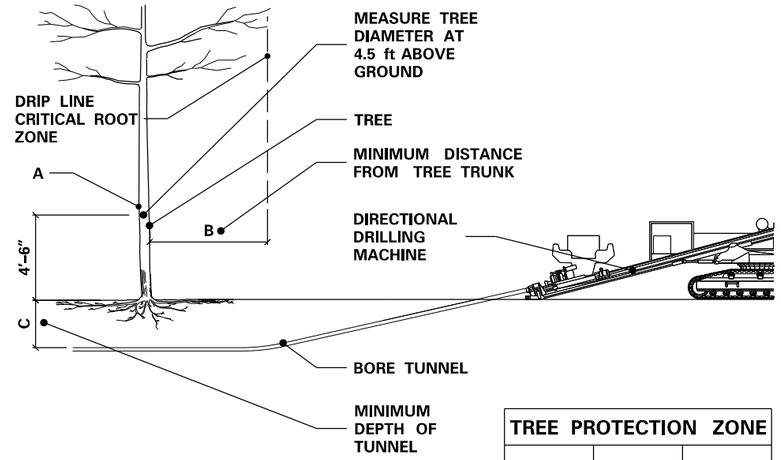
(MnDOT 2572.3A.2)



1. ANY FILL REQUIRED WITHIN THE DRIP LINE OF TREES, IS UNCOMPACTED ROOTING TOPSOIL BORROW.
2. EXCESSIVE FILL MAY REQUIRE PLACING PERFORATED PIPE WITH AT LEAST ONE DAYLIGHTED END OPENING AS AN AERATION SYSTEM.

ROOTING TOPSOIL BORROW

(MnDOT 2572.3A.4)



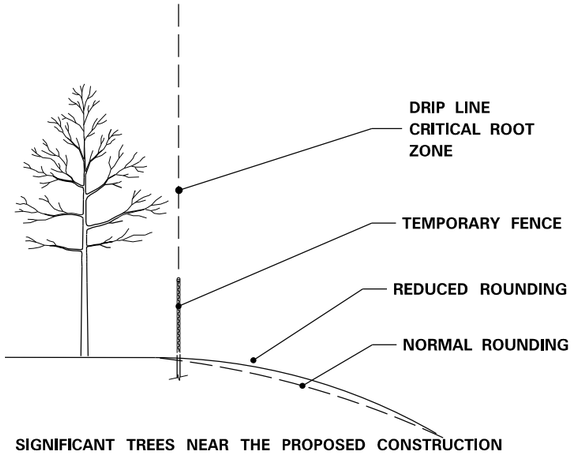
NOTE:

1. (A) IS THE DIAMETER OF TREES MEASURED 4'–6" FEET ABOVE THE GROUND AND IS TERMED THE "DIAMETER AT BREAST HEIGHT," (DBH).
2. USING A TREE DIAMETER TAPE, WRAP THE TAPE AROUND THE GIRTH OF THE TREE, AT THE DBH, BEING CAREFUL NOT TO TWIST THE TAPE.

TREE PROTECTION ZONE		
A	B	C
< 2"	2'	2'
2–4"	4'	2.5'
> 4–9"	6'	2.5'
> 9–14"	10'	3'
> 14–19"	12'	3.25'
> 19"	15'	4'

UTILITY CONSTRUCTION

(MnDOT 2572.3A.5)



SIGNIFICANT TREES NEAR THE PROPOSED CONSTRUCTION LIMITS WILL BE IDENTIFIED IN THE PLAN OR BY THE ENGINEER AND WILL BE PRESERVED BY THE CONTRACTOR.

1. PLACE THE TEMPORARY FENCE.
2. REDUCE SLOPE ROUNDING WHERE ROOT ZONES ARE DISTURBED BY NORMAL SLOPE ROUNDING.
3. VARY BACKSLOPE STEEPNESS TO AVOID TREE LOSS OR UNNECESSARY ROOT DAMAGE.

SLOPE ROUNDING

REVISION:
APPROVED: DECEMBER 11, 2015
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

STANDARD PLAN 5–297.302 | 1 OF 1

APPROVED: 12-11-2015
REVISED:

PROTECTION AND RESTORATION OF VEGETATION

C.P. 23811

SHEET NO. 8 OF 28 SHEETS

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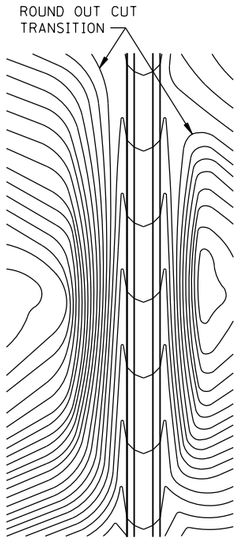
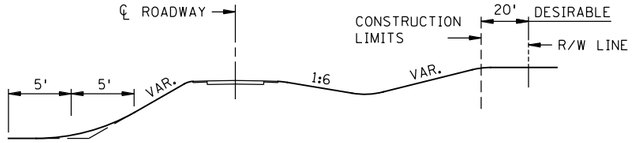
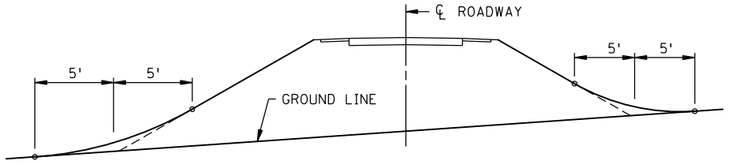


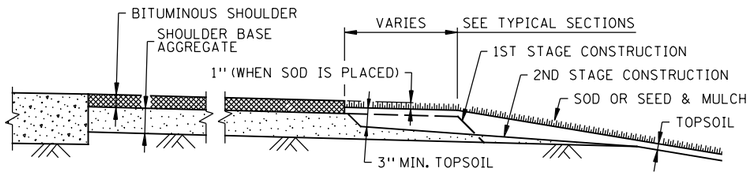
CONTOURING ROAD CUTS



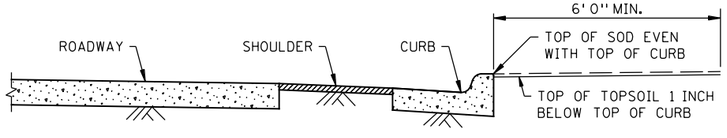
ROUNDING SHOULDERS AND BACKSLOPES



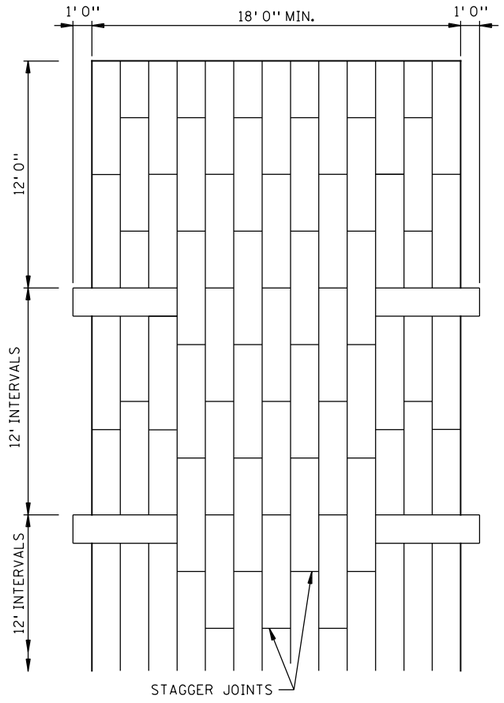
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



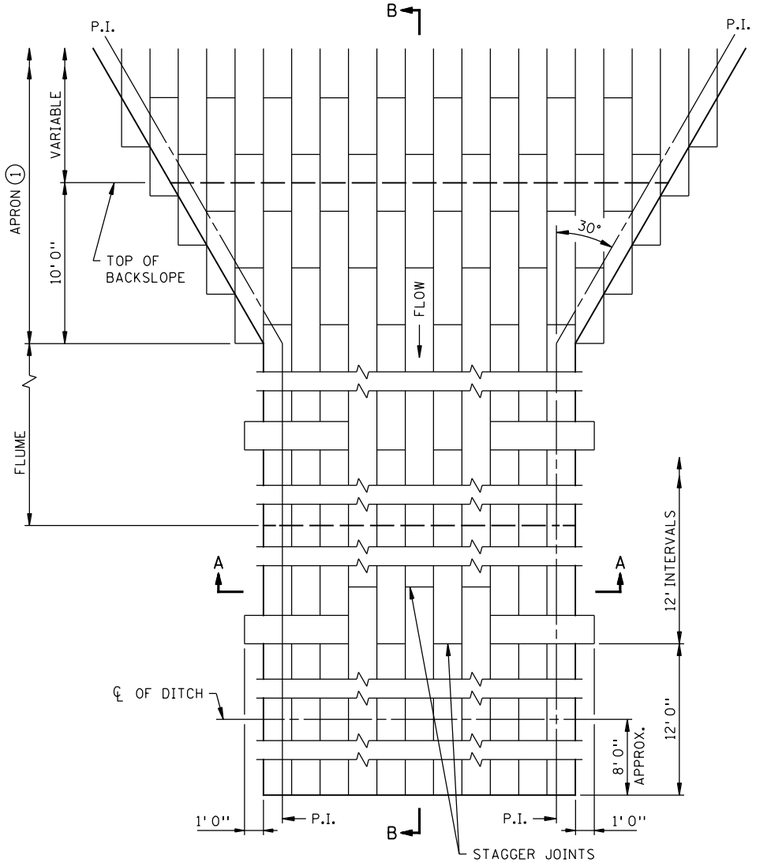
SHAPING AND TOPSOILING INSLOPES



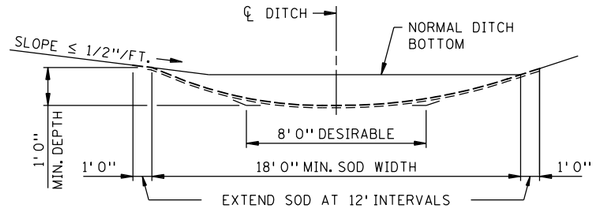
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



PLAN VIEW

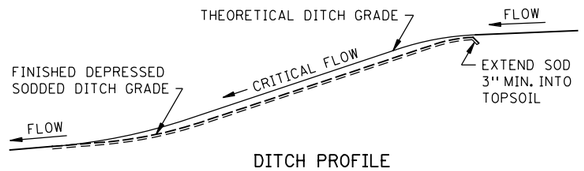


PLAN VIEW



SODDED DITCH CROSS SECTION

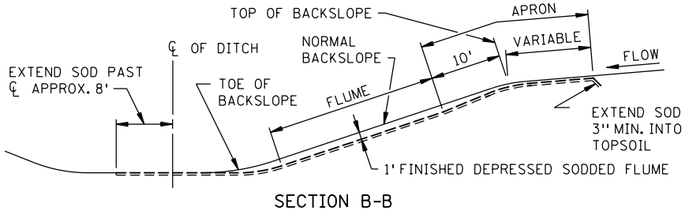
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



DITCH PROFILE

SODDED DITCH DETAILS

SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:
APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 1 OF 3

APPROVED: 2-28-2017
REVISED:

STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL

ALONG ROADWAYS, DITCHES AND FLUMES

C.P. 23811

SHEET NO. 9 OF 28 SHEETS

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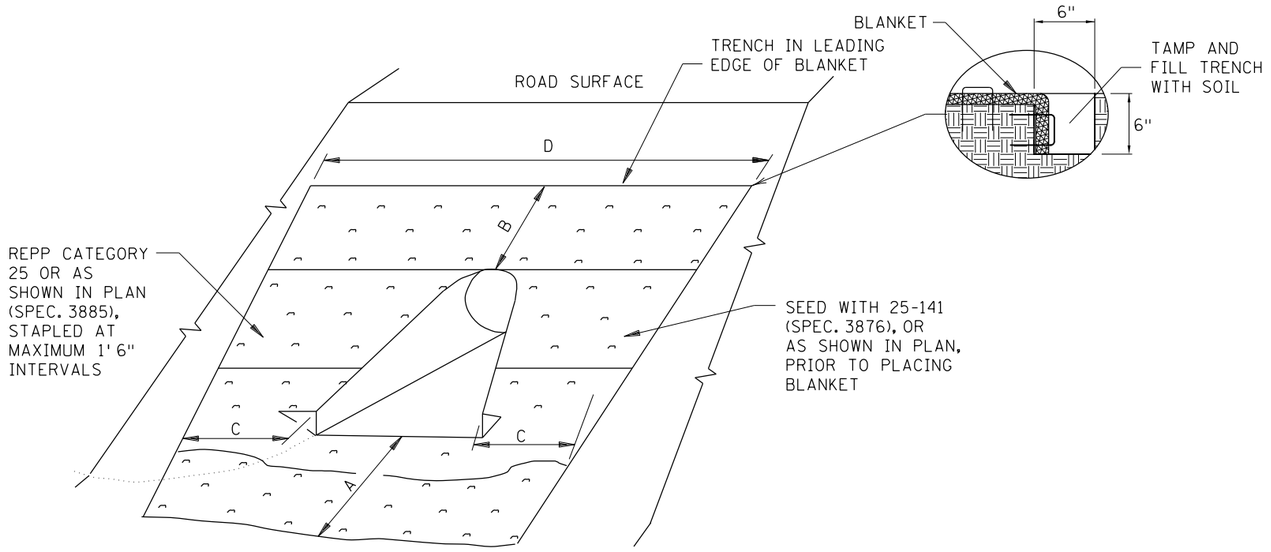
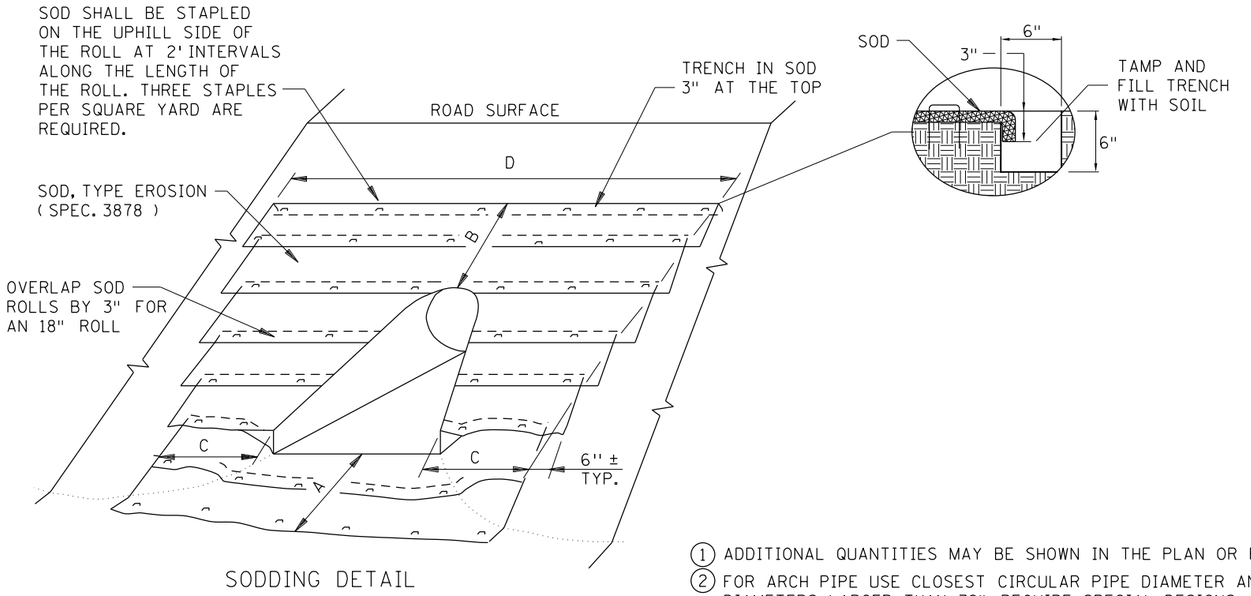


ROLLED EROSION PREVENTION PRODUCT (BLANKET) & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	9	9	8	8	N/A	N/A	3'	1.5'	3'	13'
18"	13	12	12	14	16	N/A	3'	3'	3'	16'
21"	14	14	14	16	18	14	3'	3'	3'	17'
24"	16	15	16	19	21	17	3'	3'	3'	18'
27"	N/A	20	N/A	N/A	N/A	N/A	3'	4.5'	3'	20'
30"	23	22	25	30	32	N/A	3'	4.5'	3'	22'
36"	34	34	39	48	51	37	4.5'	4.5'	4.5'	27'
42"	43	40	51	64	N/A	N/A	4.5'	6'	4.5'	30'
48"	54	50	66	82	N/A	N/A	4.5'	7.5'	4.5'	34'
54"	65	58	81	102	N/A	N/A	4.5'	9'	4.5'	37'
60"	69	59	91	115	N/A	N/A	4.5'	9'	4.5'	39'
66"	69	63	N/A	N/A	N/A	N/A	4.5'	9'	4.5'	39'
72"	78	72	99	122	N/A	N/A	4.5'	10.5'	4.5'	41'

CULVERT OUTLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	10	10	9	10	N/A	N/A	4.5'	1.5'	3'	13'
18"	13	13	12	14	15	N/A	6'	1.5'	3'	14'
21"	16	14	16	18	19	15	6'	1.5'	3'	15'
24"	18	18	18	21	22	18	7.5'	1.5'	3'	16'
27"	N/A	19	N/A	N/A	N/A	N/A	7.5'	1.5'	3'	17'
30"	23	23	24	28	29	N/A	9'	1.5'	3'	18'
36"	36	35	38	47	48	37	10.5'	1.5'	4.5'	23'
42"	43	40	47	58	N/A	N/A	12'	1.5'	4.5'	25'
48"	50	46	57	70	N/A	N/A	13.5'	1.5'	4.5'	27'
54"	57	50	67	84	N/A	N/A	15'	1.5'	4.5'	29'
60"	74	63	90	113	N/A	N/A	16.5'	1.5'	6'	33'
66"	75	67	N/A	N/A	N/A	N/A	16.5'	1.5'	6'	33'
72"	77	70	92	114	N/A	N/A	16.5'	1.5'	6'	34'

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.

QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.

FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.

FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).

AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.

CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.

① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.

② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 2 OF 3

APPROVED: 1-8-2020
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL

TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

C.P. 23811

SHEET NO. 10 OF 28 SHEETS

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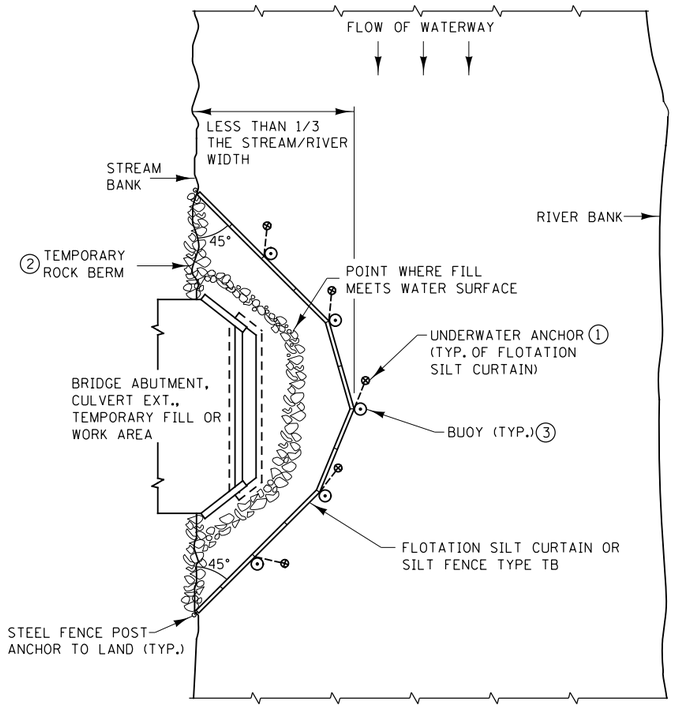
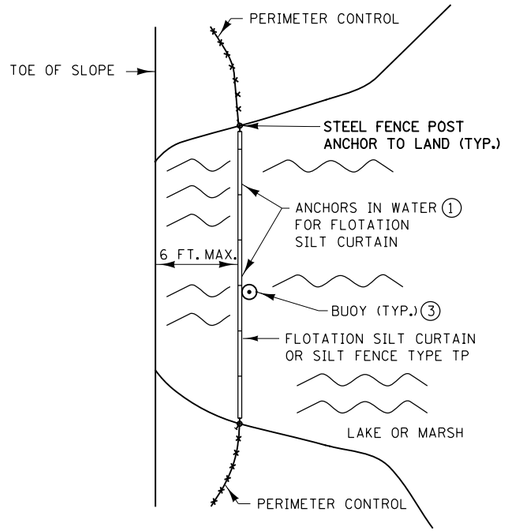
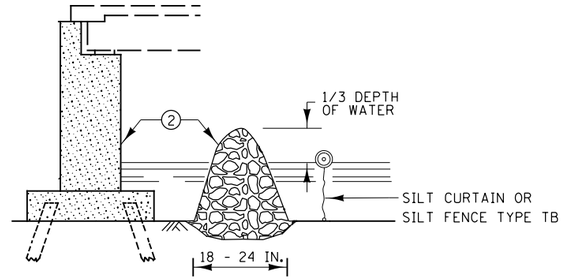


PLAN VIEW FOR STREAM ⑤



PLAN VIEW FOR LAKE OR MARSH ⑤

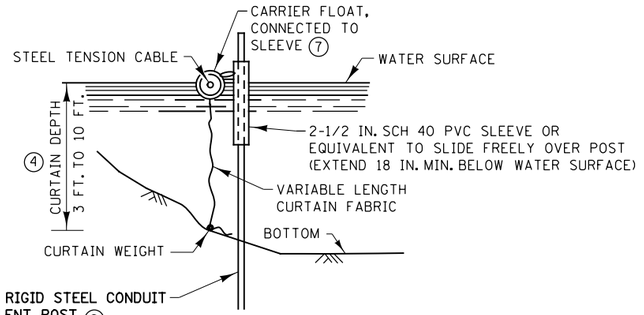


TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

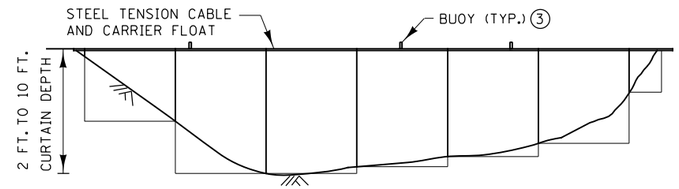
INSTALLATION GUIDELINES
SILT FENCE TYPE TB
MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: STILL WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

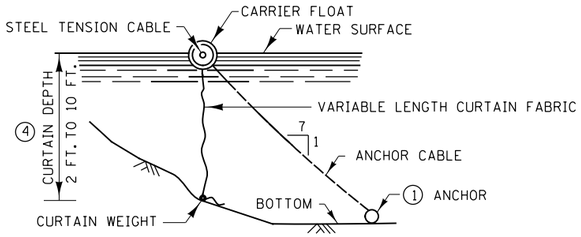
INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: MOVING WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.



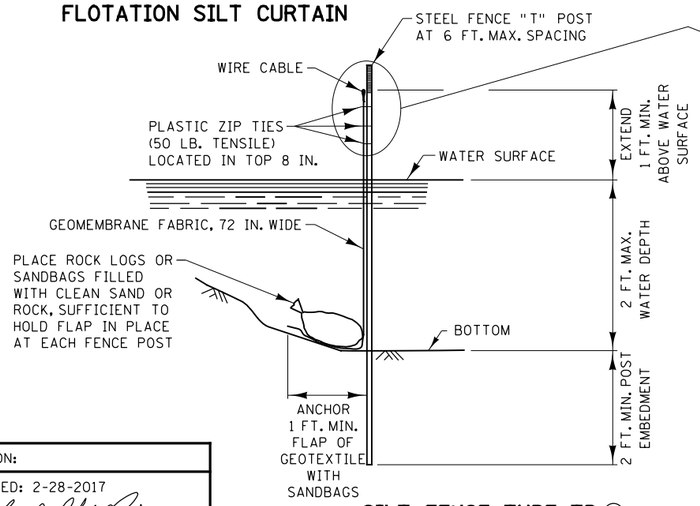
ALTERNATE FLOTATION SILT CURTAIN



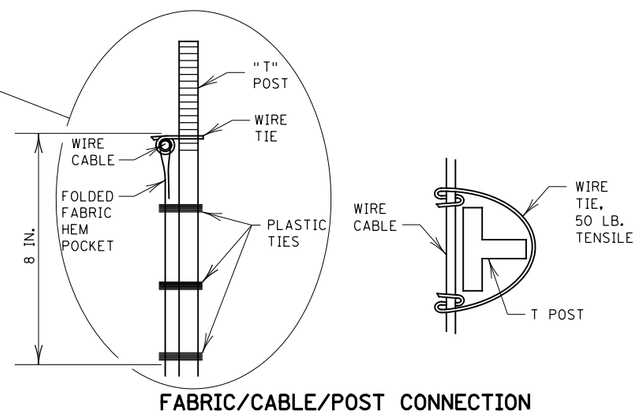
FRONT VIEW FOR FLOTATION SILT CURTAIN



FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥



FABRIC/CABLE/POST CONNECTION

NOTES:

SEE SPECS. 2573, 3886, 3887 & 3893.

① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.

② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.

③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.

④ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB.

⑤ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.

⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.

⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.

⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

REVISION:

APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 | 1 OF 8

APPROVED: 2-28-2017
REVISED:

STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
SILT CURTAIN OR SILT FENCE TYPE TB

C.P. 23811

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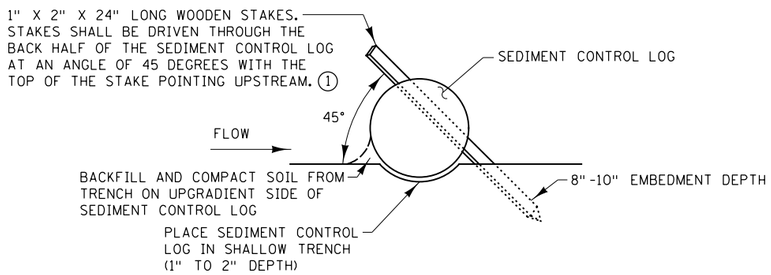
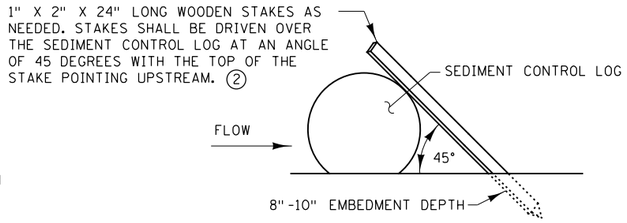
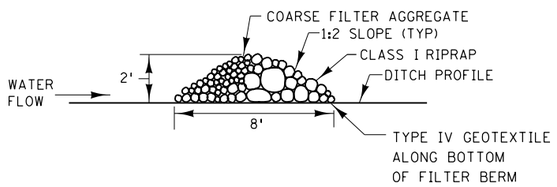


TYPES: STRAW, WOOD FIBER, OR COIR

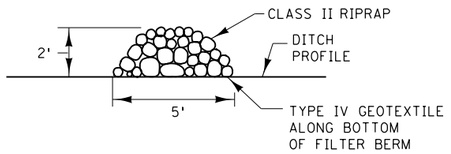


TYPES: WOOD CHIP, COMPOST, OR ROCK

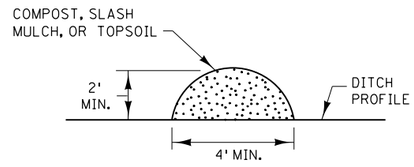
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

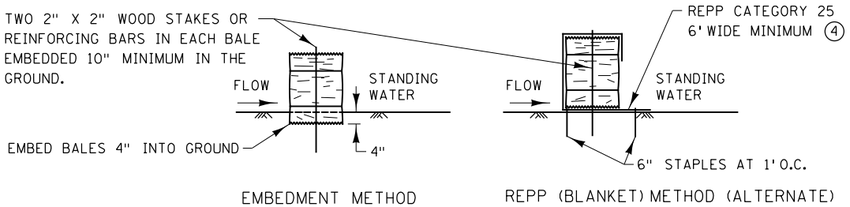


TYPE 5 (ROCK)



TYPE 1 (COMPOST), TYPE 2 (SLASH MULCH), OR TYPE 4 (TOPSOIL)

FILTER BERMS



EMBEDMENT METHOD

REPP (BLANKET) METHOD (ALTERNATE)

BALE BARRIERS(3)

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

SEE SPECS. 2573, 3149, 3874, 3882, 3885, 3886, AND 3897.

(1) SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1' FOR DITCH CHECKS OR 2' FOR OTHER APPLICATIONS.

(2) PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

(3) TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6" MAXIMUM DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14" X 18" X 36" LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.

(4) INSTEAD OF TRENCHING, PLACE BALE ON THE REPP (BLANKET) AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405 | **2 OF 8**

APPROVED: 1-8-2020
REVISED:

TEMPORARY SEDIMENT CONTROL

FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS

C.P. 23811

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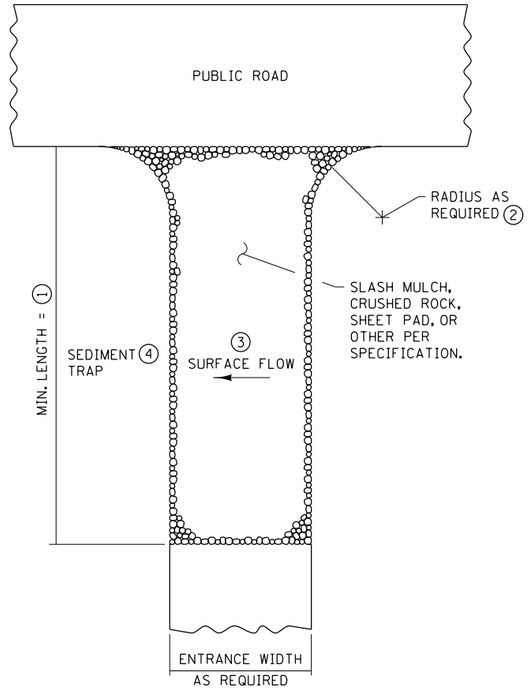
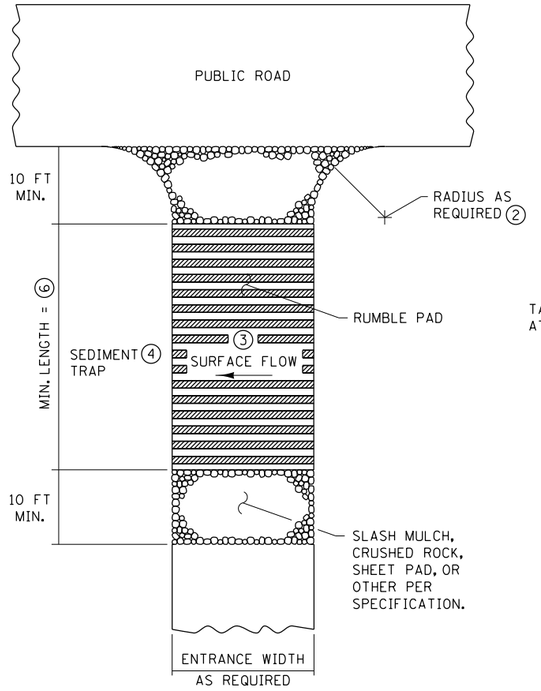
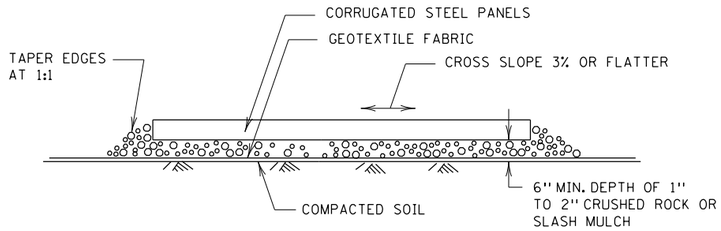


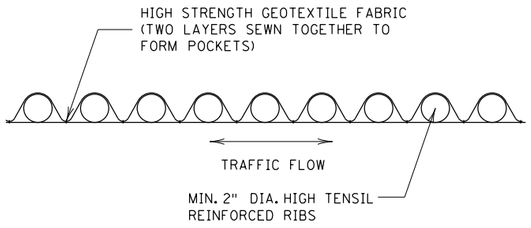
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



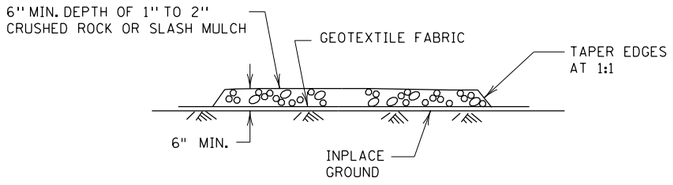
RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD



SHEET PAD



SLASH MULCH OR CRUSHED ROCK

NOTES:

SEE SPECS. 2573 & 3882.

(1) MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.

(2) PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.

(3) IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.

(4) IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.

(5) IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.

(6) MINIMUM LENGTH OF RUMBLE PAD SHALL BE 20 FEET, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE RUMBLE PAD SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.

(7) MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

APPROVED: 2-28-2017

REVISED:

STANDARD PLAN 5-297.405 | 5 OF 8

TEMPORARY SEDIMENT CONTROL

STABILIZED CONSTRUCTION EXIT

C.P. 23811

SHEET NO. 13 OF 28 SHEETS

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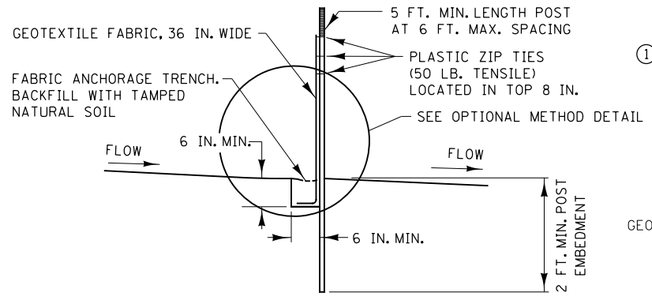
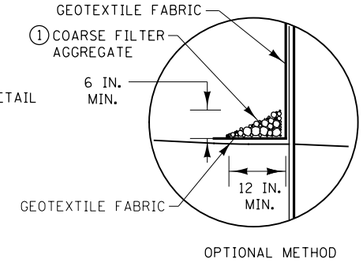
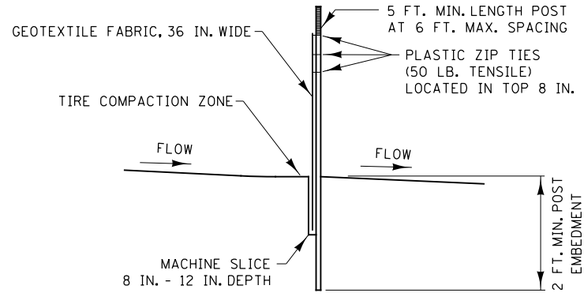
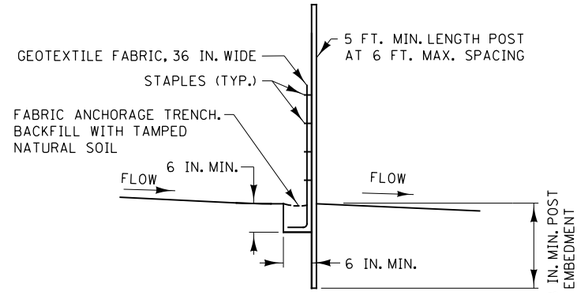




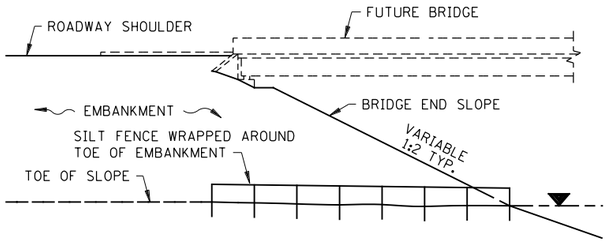
SILT FENCE TYPE HI ② (HAND INSTALLED)



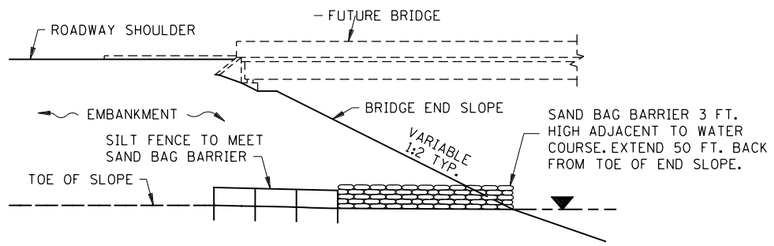
SILT FENCE TYPE MS ② (MACHINE SLICED)



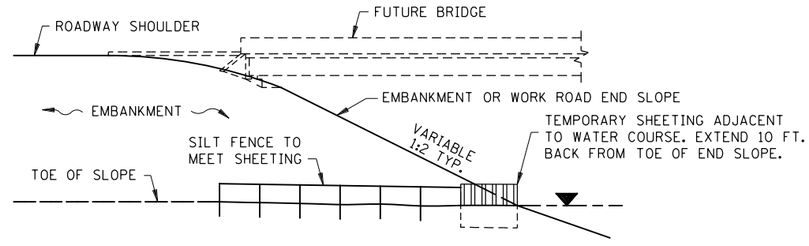
SILT FENCE TYPE PA ③ (PREASSEMBLED)



SILT FENCE ONLY ④



SILT FENCE WITH SAND BAGS ⑤



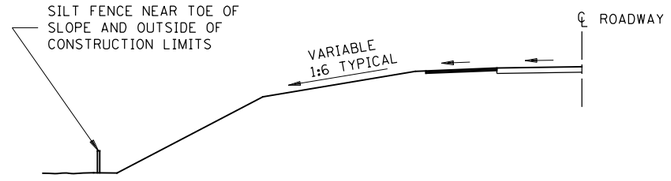
SILT FENCE WITH SHEETING ⑥

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER

PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

④ WATER COURSE FLOW VELOCITY: STANDING.
CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1. ACRE.

⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405 | 6 OF 8

APPROVED: 2-28-2017

REVISED:

TEMPORARY SEDIMENT CONTROL

SILT FENCE

C.P. 23811

SHEET NO. 14 OF 28 SHEETS

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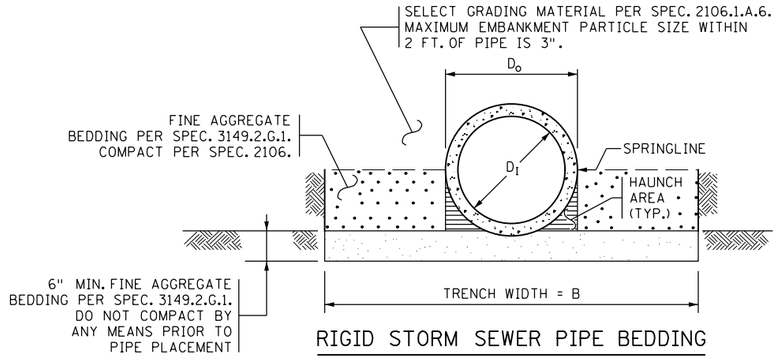
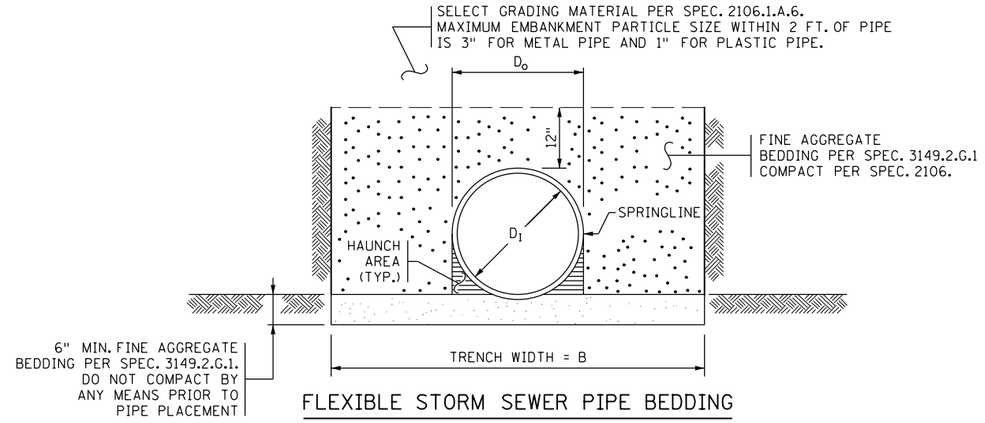


RIGID STORM SEWER PIPE BEDDING

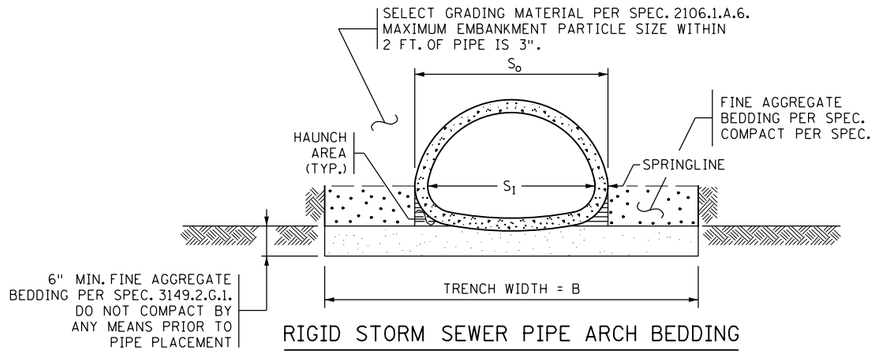
TRENCH BASE WIDTH ①②	
PIPE DIA. D_I OR S_I	TRENCH WIDTH B
< 42"	D_o + 24"
42" TO 54"	1.5 x D_o
> 54"	D_o + 36"

PLASTIC PIPE
WITH H > 10 FT. ①②

PIPE DIA.	TRENCH WIDTH (FEET)
12"	5'-2"
15"	5'-6"
18"	5'-9"
24"	6'-6"
30"	8'-0"
36"	9'-6"
42"	11'-0"
48"	12'-6"



FLEXIBLE STORM SEWER PIPE BEDDING



RIGID STORM SEWER PIPE ARCH BEDDING

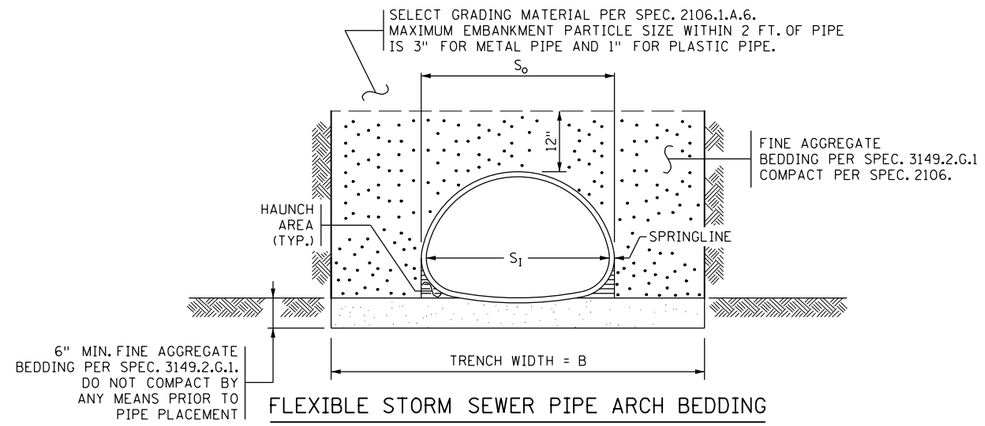
-LEGEND-

D_I = INSIDE DIAMETER OF ROUND PIPE (INCHES).
D_O = OUTSIDE DIAMETER OF ROUND PIPE (INCHES).
S_I = INSIDE SPAN OF PIPE-ARCH (INCHES).
S_O = OUTSIDE SPAN OF PIPE-ARCH (INCHES).
H = FILL COVER HEIGHT OVER PIPE (FEET).

= UNDISTURBED SOIL

= COMPACTED BEDDING

= LOOSE BEDDING, COMPACTED AFTER PIPE PLACEMENT



FLEXIBLE STORM SEWER PIPE ARCH BEDDING

CONSTRUCTION SEQUENCE

1. LOOSELY PLACE 6" OF FINE AGGREGATE BEDDING MATERIAL TO GRADE. DO NOT COMPACT PRIOR TO PIPE PLACEMENT.
2. FOR PIPES WITH BELL, REMOVE MATERIAL IN BELL AREA PRIOR TO PLACEMENT.
3. FURNISH AND INSTALL PIPE TO GRADE.
4. AFTER PLACEMENT OF THE PIPE, PLACE ADDITIONAL FINE AGGREGATE BEDDING AND COMPACT THE FULL LENGTH ON BOTH SIDES OF THE PIPE UNDERNEATH THE HAUNCH AREA BY FIRST SHOVEL SLICING (MANUALLY SHOVE THE BLADE END OF SHOVEL AT AN ANGLE DOWN THE ENTIRE LENGTH OF HAUNCH UNDER THE PIPE). THEN COMPACT THE HAUNCH AT AN ANGLE USING A POWERED MECHANICAL OR PNEUMATIC DEVICE (I.E. POLE TAMPER, JUMPING JACK, OR SIMILAR).
5. COMPACT THE REMAINING MATERIAL OUTSIDE THE HAUNCH AREA TO THE REQUIREMENTS OF SPEC. 2106 ENSURING THAT THE ENTIRE LENGTH OF PIPE IS SUPPORTED UNIFORMLY BY BEDDING.
6. PLACE AND COMPACT BACKFILL EVENLY AND SIMULTANEOUSLY IN 6" LIFTS ON EACH SIDE OF THE PIPE UP TO THE SPRINGLINE FOR RIGID PIPE AND 12" ABOVE THE TOP OF THE PIPE FOR FLEXIBLE PIPE WHEN COMPACTED.
7. COMPLETE REMAINING BACKFILL.

NOTES

EXCAVATE & CONSTRUCT ALL TRENCHES AND SLOPES PER OSHA REQUIREMENTS.

PIPE SIZE IS BASED ON THE NOMINAL INSIDE DIAMETER OR SPAN.

PROTECT ALL PIPE DURING CONSTRUCTION PER SPEC. 2503.

WHEN RIPRAP IS REQUIRED AT THE APRON END, SEE STANDARD PLATE OR PLAN FOR RIPRAP INSTALLATION AND QUANTITIES. FOR APRONS WITHOUT RIPRAP PLACE 6" MIN. FINE AGGREGATE BEDDING UNDER APRONS. USE A TRENCH WIDTH EQUAL TO THE PIPE TRENCH WIDTH.

FINE AGGREGATE BEDDING INCLUDING THE COST OF EXCAVATION, PLACEMENT AND COMPACTION IS INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

EXCAVATION AND BACKFILL WITH SELECT GRADING MATERIAL ARE NOT TABULATED SEPARATELY BUT ARE INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

RIGID PIPE INCLUDES CONCRETE. FLEXIBLE PIPE INCLUDES METAL, AND PLASTIC MATERIALS SUCH AS CORRUGATED POLYPROPYLENE (PP), CORRUGATED POLYETHYLENE (CP) AND POLYVINYL CHLORIDE (PVC).

① MODIFY TRENCH WIDTH & SLOPE AS NECESSARY TO COMPLY WITH OSHA REQUIREMENTS.

② USE PLASTIC PIPE TABLE FOR TRENCH WIDTHS WHEN FILL HEIGHT IS GREATER THAN 10 FT.

REVISION:

APPROVED: JANUARY 18, 2019
Kevin Western
STATE BRIDGE ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.442 | 1 OF 1

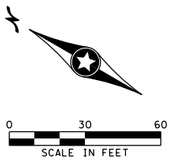
APPROVED: 01-18-2019
REVISED:

Tom Sorel
STATE DESIGN ENGINEER

C.P. 23811

STANDARD STORM SEWER BEDDING
FOR RIGID AND FLEXIBLE PIPE

SHEET NO. 15 OF 28 SHEETS



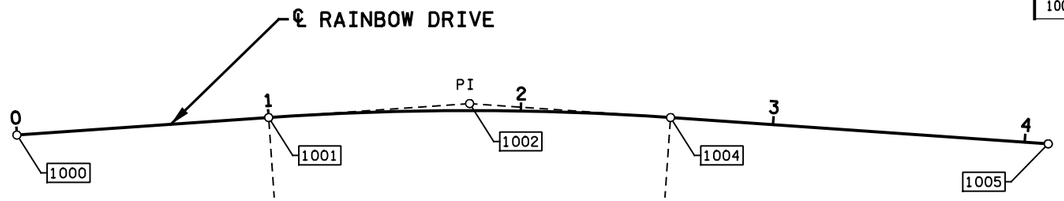
ALIGNMENT TABULATION

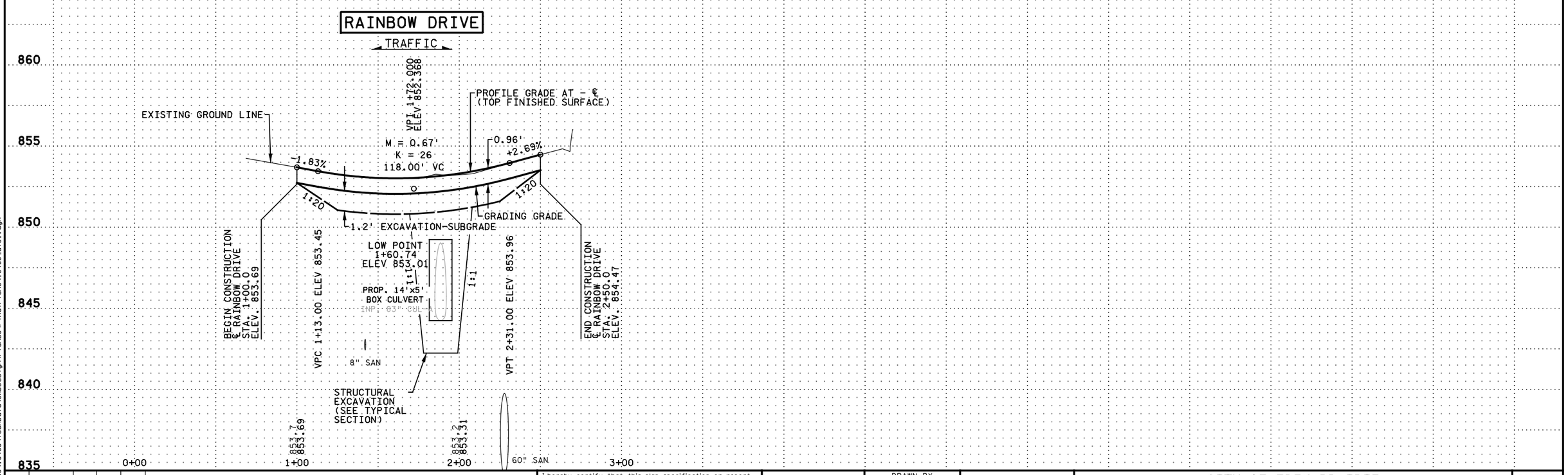
POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA: DELTA	DEGREE	RADIUS	TANGENT	LENGTH	COORDINATES: X	Y	AZIMUTH
			SPIRAL CURVE DATA: ANGLE (~~θs~~)	DEGREE	ST	LT	LS			
℄ RAINBOW DRIVE <RAINBOW>										
1000	POT	℄ RANBOW DRIVE 0+00.000						475,349.3440	133,361.3277	
1001	PC	1+00.000						475,405.3482	133,278.4812	145° 56' 28.75"
1002	PI	1+79.805	7° 58' 03.54" RT	5° 00' 00.00"	1,145.916'	79.805'	159.353'	475,450.0424	133,212.3655	PI
1003	CC	(1)						474,455.9979	132,636.7207	
1004	PT	2+59.353						475,485.1406	133,140.6928	153° 54' 32.29"
1005	POT	4+09.353						475,551.1104	133,005.9783	

NOTES:

(1) ALIGNMENT POINT IS NOT SHOWN ON ALIGNMENT PLAN VIEW.

<XXXX> INDICATES GEOPAK ALIGNMENT NAME.





NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

DRAWN BY: DRAWN-1
DESIGNED BY: DESIGNED-1
CHECKED BY: CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

ALIGNMENT AND ROADWAY PROFILE PLAN

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 16 OF 28

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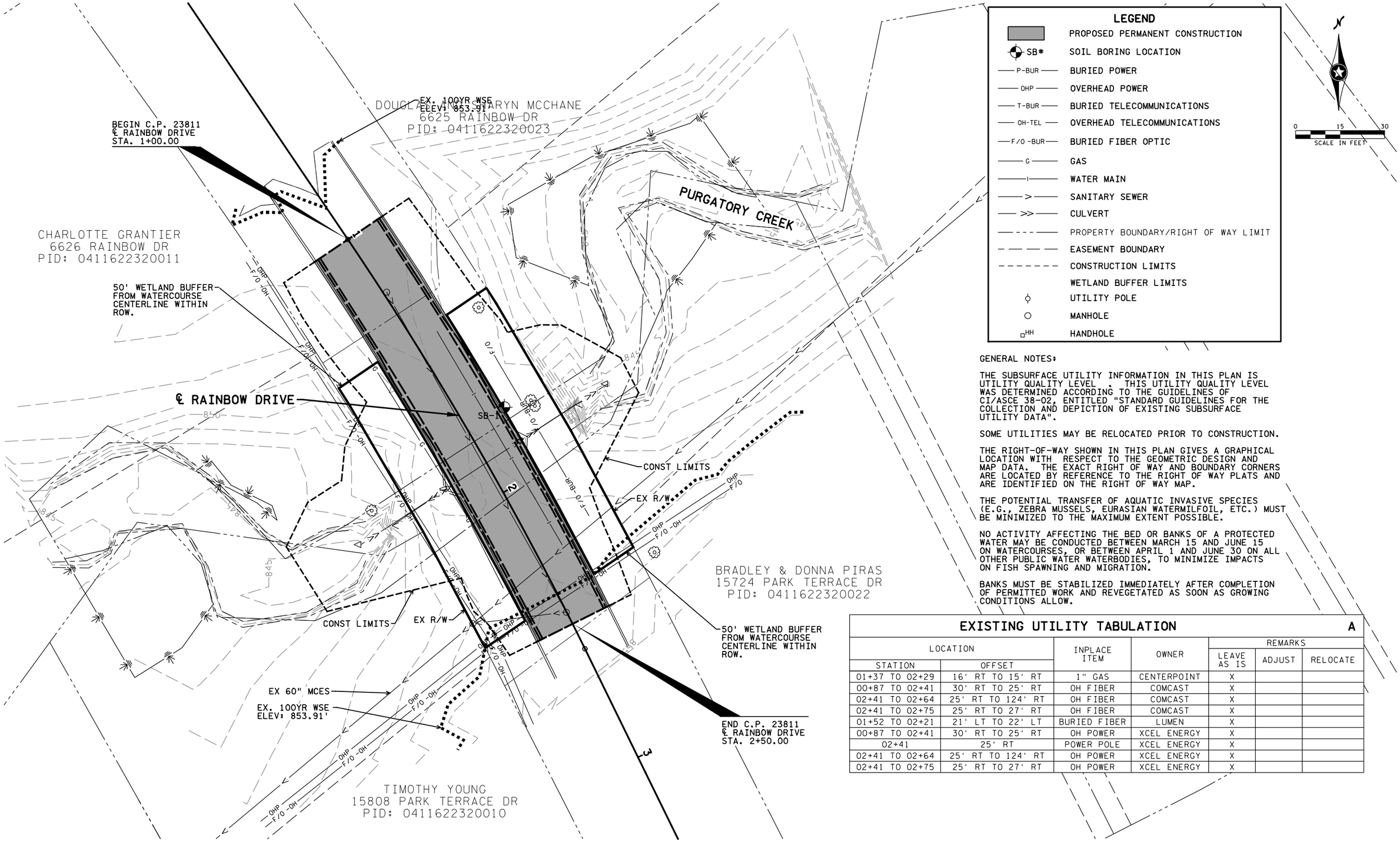

GENERAL NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL . THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

SOME UTILITIES MAY BE RELOCATED PRIOR TO CONSTRUCTION.

THE RIGHT-OF-WAY SHOWN IN THIS PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP.

THE POTENTIAL TRANSFER OF AQUATIC INVASIVE SPECIES (E.G., ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC.) MUST BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE.

NO ACTIVITY AFFECTING THE BED OR BANKS OF A PROTECTED WATER MAY BE CONDUCTED BETWEEN MARCH 15 AND JUNE 15 ON WATERCOURSES, OR BETWEEN APRIL 1 AND JUNE 30 ON ALL OTHER PUBLIC WATER WATERBODIES, TO MINIMIZE IMPACTS ON FISH SPAWNING AND MIGRATION.

BANKS MUST BE STABILIZED IMMEDIATELY AFTER COMPLETION OF PERMITTED WORK AND REVEGETATED AS SOON AS GROWING CONDITIONS ALLOW.

EXISTING UTILITY TABULATION A

LOCATION		INPLACE ITEM	OWNER	REMARKS		
STATION	OFFSET			LEAVE AS IS	ADJUST	RELOCATE
01+37 TO 02+29	16' RT TO 15' RT	1" GAS	CENTERPOINT	X		
00+87 TO 02+41	30' RT TO 25' RT	OH FIBER	COMCAST	X		
02+41 TO 02+64	25' RT TO 124' RT	OH FIBER	COMCAST	X		
02+41 TO 02+75	25' RT TO 27' RT	OH FIBER	COMCAST	X		
01+52 TO 02+21	21' LT TO 22' LT	BURIED FIBER	LUMEN	X		
00+87 TO 02+41	30' RT TO 25' RT	OH POWER	XCEL ENERGY	X		
02+41	25' RT	POWER POLE	XCEL ENERGY	X		
02+41 TO 02+64	25' RT TO 124' RT	OH POWER	XCEL ENERGY	X		
02+41 TO 02+75	25' RT TO 27' RT	OH POWER	XCEL ENERGY	X		

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

DRAWN BY DRAWN-1
DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

TOPOGRAPHY AND UTILITY PLAN
RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 17 OF 28

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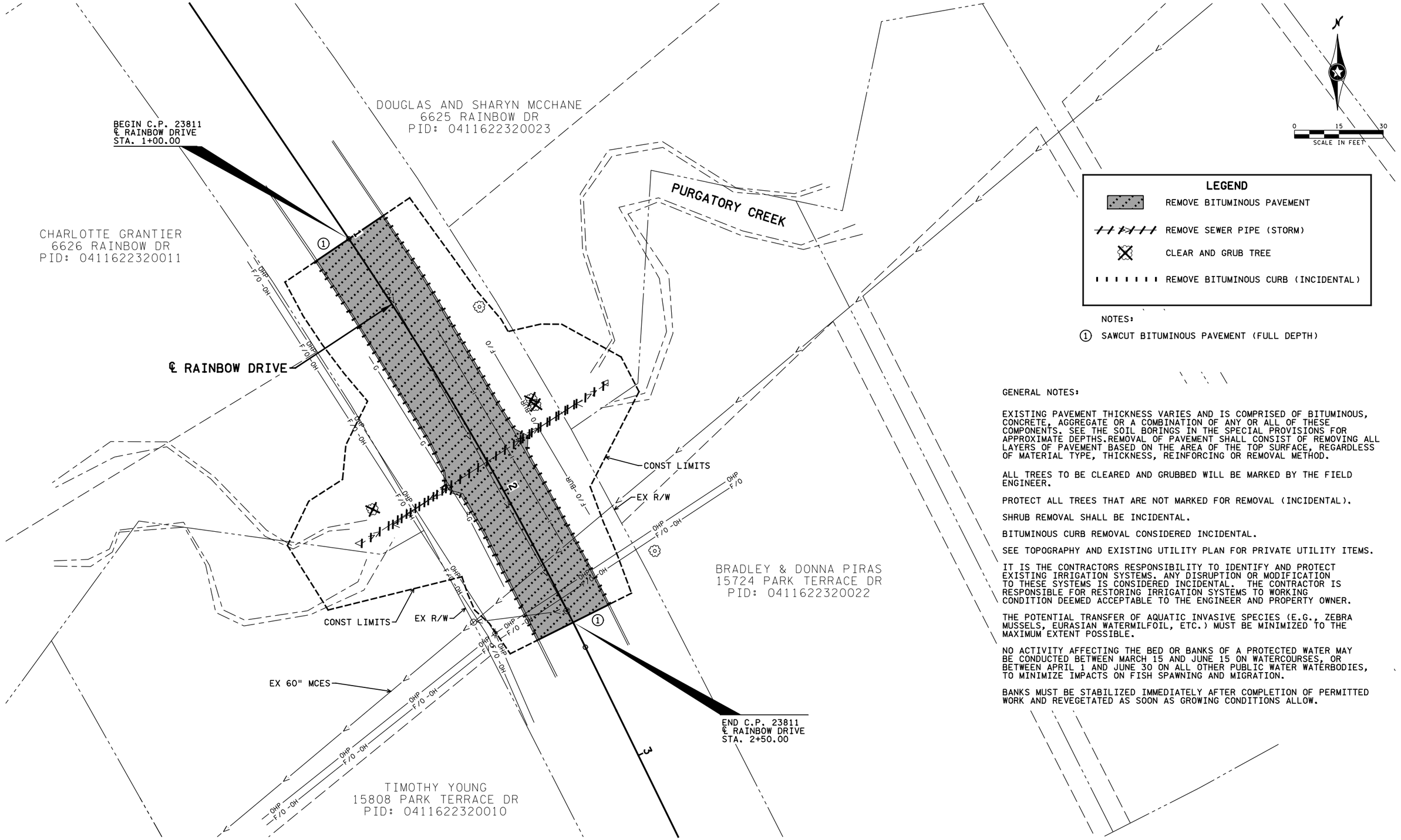

NOTES:

1. SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

GENERAL NOTES:

EXISTING PAVEMENT THICKNESS VARIES AND IS COMPRISED OF BITUMINOUS, CONCRETE, AGGREGATE OR A COMBINATION OF ANY OR ALL OF THESE COMPONENTS. SEE THE SOIL BORINGS IN THE SPECIAL PROVISIONS FOR APPROXIMATE DEPTHS.REMOVAL OF PAVEMENT SHALL CONSIST OF REMOVING ALL LAYERS OF PAVEMENT BASED ON THE AREA OF THE TOP SURFACE, REGARDLESS OF MATERIAL TYPE, THICKNESS, REINFORCING OR REMOVAL METHOD.

ALL TREES TO BE CLEARED AND GRUBBED WILL BE MARKED BY THE FIELD ENGINEER.

PROTECT ALL TREES THAT ARE NOT MARKED FOR REMOVAL (INCIDENTAL).

SHRUB REMOVAL SHALL BE INCIDENTAL.

BITUMINOUS CURB REMOVAL CONSIDERED INCIDENTAL.

SEE TOPOGRAPHY AND EXISTING UTILITY PLAN FOR PRIVATE UTILITY ITEMS.

IT IS THE CONTRACTORS RESPONSIBILITY TO IDENTIFY AND PROTECT EXISTING IRRIGATION SYSTEMS. ANY DISRUPTION OR MODIFICATION TO THESE SYSTEMS IS CONSIDERED INCIDENTAL. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING IRRIGATION SYSTEMS TO WORKING CONDITION DEEMED ACCEPTABLE TO THE ENGINEER AND PROPERTY OWNER.

THE POTENTIAL TRANSFER OF AQUATIC INVASIVE SPECIES (E.G., ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC.) MUST BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE.

NO ACTIVITY AFFECTING THE BED OR BANKS OF A PROTECTED WATER MAY BE CONDUCTED BETWEEN MARCH 15 AND JUNE 15 ON WATERCOURSES, OR BETWEEN APRIL 1 AND JUNE 30 ON ALL OTHER PUBLIC WATER WATERBODIES, TO MINIMIZE IMPACTS ON FISH SPAWNING AND MIGRATION.

BANKS MUST BE STABILIZED IMMEDIATELY AFTER COMPLETION OF PERMITTED WORK AND REVEGETATED AS SOON AS GROWING CONDITIONS ALLOW.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

DRAWN BY DRAWN-1
DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

REMOVAL PLAN

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 18 OF 28

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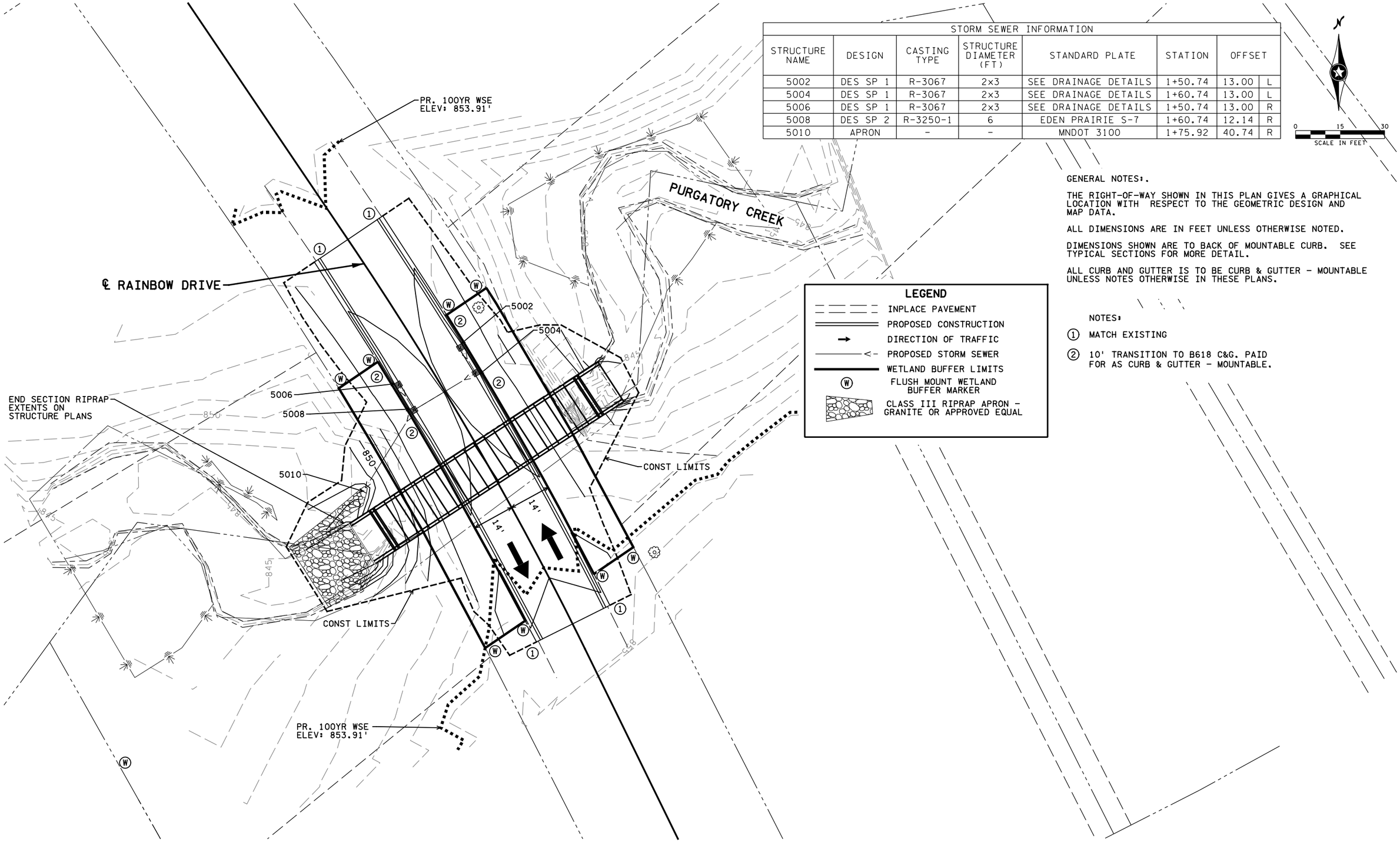
STORM SEWER INFORMATION							
STRUCTURE NAME	DESIGN	CASTING TYPE	STRUCTURE DIAMETER (FT)	STANDARD PLATE	STATION	OFFSET	
5002	DES SP 1	R-3067	2x3	SEE DRAINAGE DETAILS	1+50.74	13.00	L
5004	DES SP 1	R-3067	2x3	SEE DRAINAGE DETAILS	1+60.74	13.00	L
5006	DES SP 1	R-3067	2x3	SEE DRAINAGE DETAILS	1+50.74	13.00	R
5008	DES SP 2	R-3250-1	6	EDEN PRAIRIE S-7	1+60.74	12.14	R
5010	APRON	-	-	MNDOT 3100	1+75.92	40.74	R



LEGEND

- INPLACE PAVEMENT
- PROPOSED CONSTRUCTION
- DIRECTION OF TRAFFIC
- PROPOSED STORM SEWER
- WETLAND BUFFER LIMITS
- (W) FLUSH MOUNT WETLAND BUFFER MARKER
- CLASS III RIPRAP APRON - GRANITE OR APPROVED EQUAL

N

0 15 30
SCALE IN FEET

GENERAL NOTES:.

THE RIGHT-OF-WAY SHOWN IN THIS PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

DIMENSIONS SHOWN ARE TO BACK OF MOUNTABLE CURB. SEE TYPICAL SECTIONS FOR MORE DETAIL.

ALL CURB AND GUTTER IS TO BE CURB & GUTTER - MOUNTABLE UNLESS NOTES OTHERWISE IN THESE PLANS.

NOTES:

(1) MATCH EXISTING

(2) 10' TRANSITION TO B618 C&G. PAID FOR AS CURB & GUTTER - MOUNTABLE.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

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DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

CONSTRUCTION PLAN

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 19 OF 28

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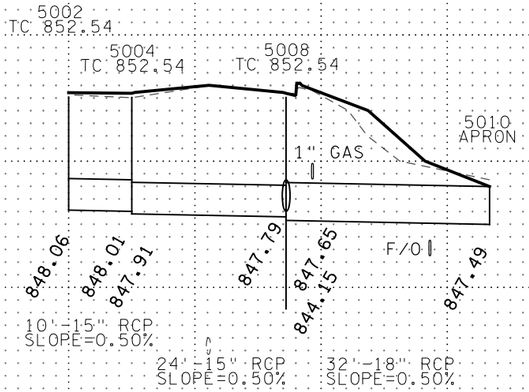

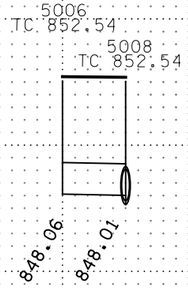

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Print Name: A. CHAPLA

Date _____ License # 61799

CITY PROJECT NO. 23811

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DESIGNED-2

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CHECKED-2

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CITY OF EDEN PRAIRIE

RAINBOW DRIVE CULVERT REPLACEMENT

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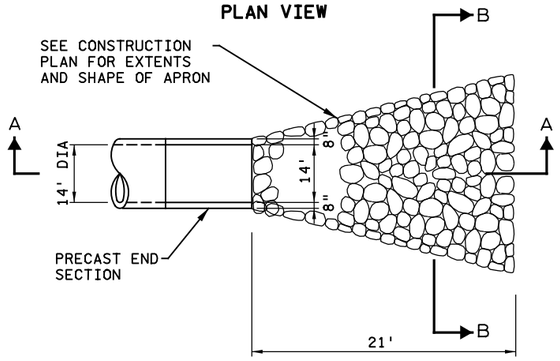
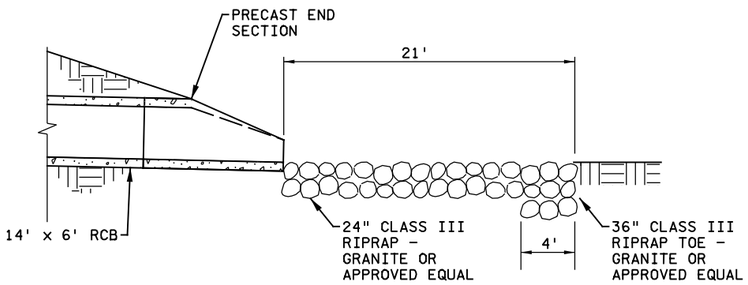
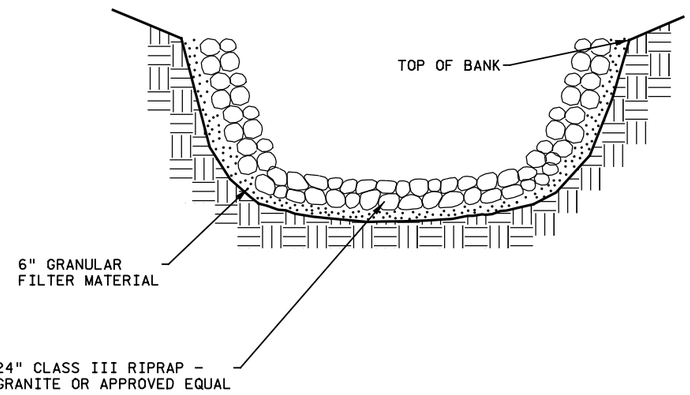
PLAN VIEW



SECTION A-A



SECTION B-B



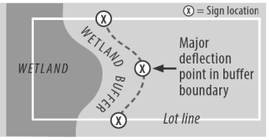
RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

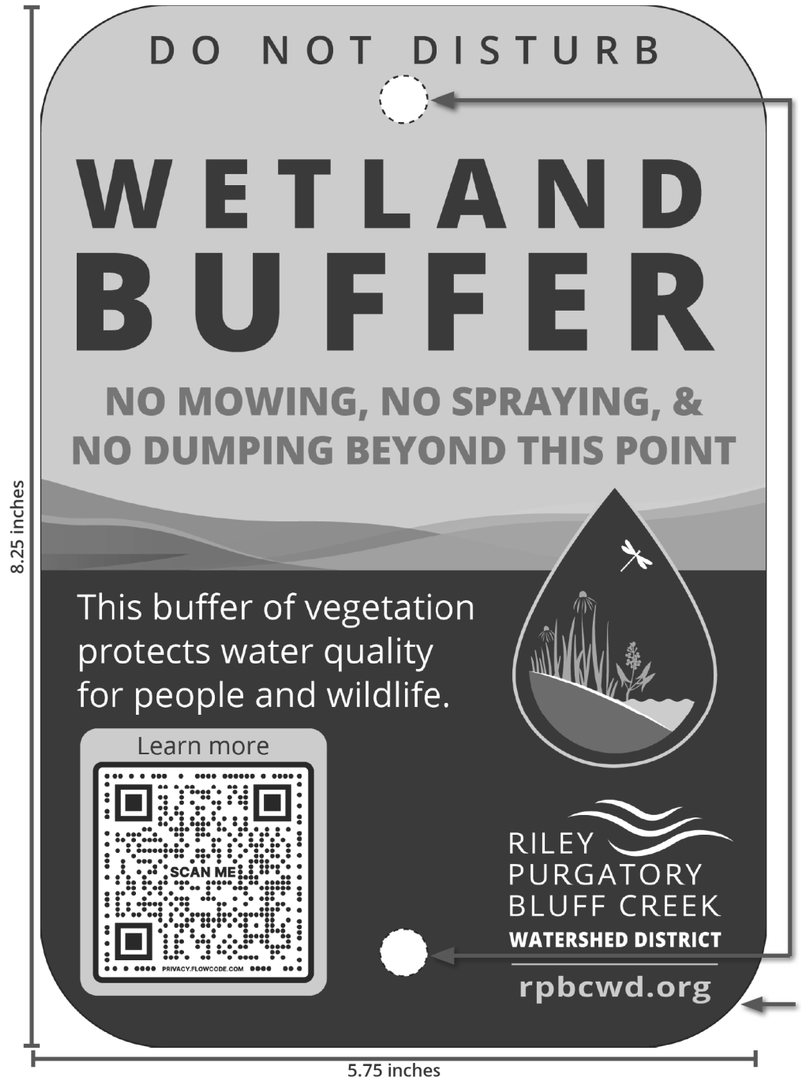
Wetland Buffer Sign Specifications

Placement

For portions of a parcel *subject to wetland buffer rule*, a sign must be placed at minimum:

- at **every lot line** crossing buffer boundary,
- at **major deflection points** in buffer boundary, and
- at least **every 200 feet** along buffer boundary.





Mounting holes

Diameter:
0.375-inch

Location:
One on top and bottom. Center each hole 0.5-inch from edge of sign.

Diameter and location of holes may be adjusted to accommodate alignment with post holes as long as text is not removed or covered by mounting bolts.

Material

Substrate:
Aluminum *at least* 0.08 inch thick.

Graphic:
Durable, exterior-grade material that is waterproof and fade-resistant.

Up to 1-inch radius on all four corners.

Version 7.19.2023

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Print Name: A. CHAPLA

Date _____ License # 61799

CITY PROJECT NO. 23811

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CITY OF EDEN PRAIRIE

DRAINAGE DETAILS

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 21 OF 28

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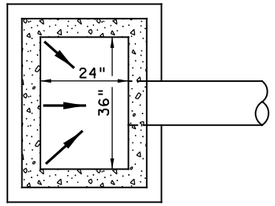
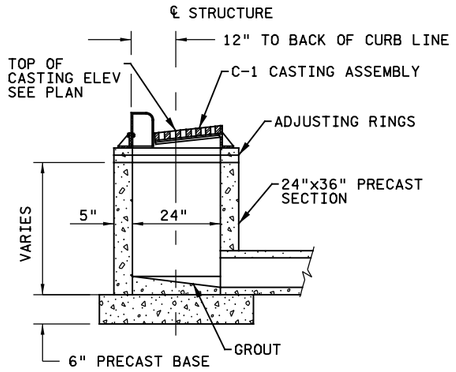


PLAN VIEW



CROSS SECTION VIEW

DRAINAGE STRUCTURE - DESIGN SPECIAL 1 (3'X 2')

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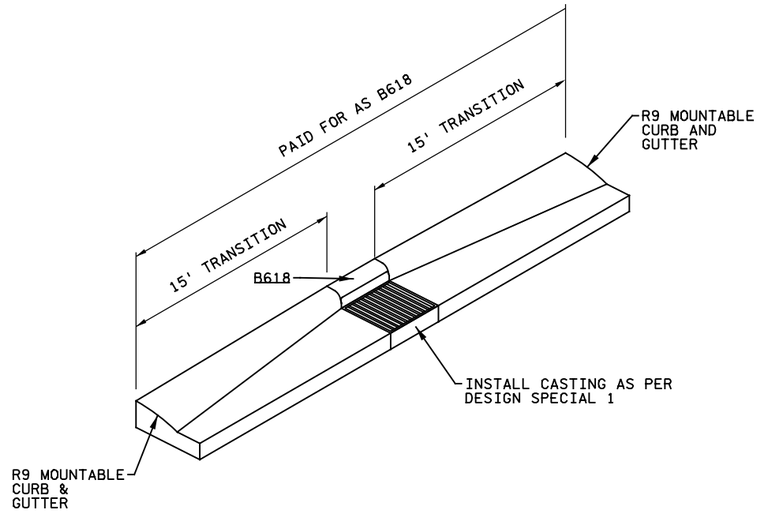

CURB TRANSITION DETAIL FOR B-618 CASTING ASSEMBLIES

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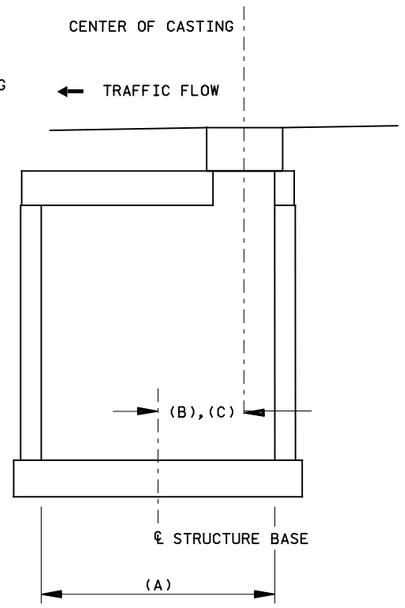
NOTES:

ALIGN CENTER OF STRUCTURES AND CENTER OF OPENING WITH GUTTER LINE. POSITION OPENING TOWARD ONCOMING TRAFFIC.

(A) 4020 DIAMETER (IN.)	(B) OFFSET FOR 27-IN. OPENING (FT.)	(C) OFFSET FOR 24-IN. x 36-IN. OPENING (FT.)
48	0.79	0.25
54	1.08	0.54
60	1.29	0.83
66	1.58	1.13
72	1.79	1.42
78	2.08	1.71
84	2.29	2.00
90	2.58	2.29
96	2.87	2.58
102	3.16	2.88
108	3.29	3.08
120	3.79	3.67



STAKING DETAIL

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Date _____ License # 61799

CITY PROJECT NO. 23811

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COMM. NO. 16468

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CITY OF EDEN PRAIRIE

DRAINAGE DETAILS

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 21 OF 28

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (SHEET 1 OF 3)

PROJECT DESCRIPTION/LOCATION AND SCOPE
SEE COVER SHEET FOR LOCATION MAP, PROJECT NUMBERS AND DESCRIPTION OF PROJECT SCOPE.

SPECIAL AND IMPAIRED WATERS
THERE ARE NO SPECIAL/IMPAIRED WATERS LOCATED WITHIN ONE MILE OF THE PROJECT LIMITS THAT RECEIVE RUNOFF FROM THE PROJECT SITE.

AREAS OF ENVIRONMENTAL SENSITIVITY
ALL AREAS OF ENVIRONMENTAL SENSITIVITY, INCLUDING WETLANDS, ARE LABELED AS "AREAS OF ENVIRONMENTAL SENSITIVITY" IN THE PLANS.

LONG TERM MAINTENANCE AND OPERATION
MAINTENANCE STAFF FROM THE CITY OF EDEN PRAIRIE ARE RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE PERMANENT STORMWATER SYSTEMS. THE CITY OF EDEN PRAIRIE HAS AN MS4 SWPPP THAT IS AVAILABLE ONLINE OR UPON REQUEST.

SWPPP DEVELOPMENT AND MAINTENANCE
THIS SWPPP WAS PREPARED BY PERSONNEL WHO ARE CERTIFIED IN THE DESIGN OF CONSTRUCTION SWPPPS. COPIES OF THE CERTIFICATIONS ARE AVAILABLE UPON REQUEST.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A CERTIFIED EROSION AND SEDIMENT CONTROL SUPERVISOR WHO SHALL BE RESPONSIBLE FOR FINALIZING, CERTIFYING, AND MAINTAINING THE SWPPP DOCUMENT AND OVERSEEING THE IMPLEMENTATION OF THE SWPPP. SEE PAGE 2 OF THE SWPPP NARRATIVE FOR ADDITIONAL REQUIREMENTS.

IN ADDITION, EACH CONTRACTOR OR SUBCONTRACTOR THAT PLACES EROSION OR SEDIMENT CONTROL DEVICES AS LISTED IN MNDOT SPECIFICATION 2573 SHALL PROVIDE AT LEAST ONE CERTIFIED INSTALLER AS INDICATED IN THE MNDOT SPECIFICATION.

THE SWPPP SHALL BE AMENDED WHEN:
A. THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASON HAVING A SIGNIFICANT EFFECT ON DISCHARGE OF POLLUTANTS.
B. INSPECTIONS INDICATE THE SWPPP IS NOT EFFECTIVE.
C. A WATER QUALITY STANDARD CHANGES AND THE MPCA DETERMINES THE SWPPP SHALL BE AMENDED TO COMPLY.
A DESCRIPTION OF ANY CHANGE TO THE SWPPP, ALONG WITH THE DATE AND NAME OF THE REVISION SHALL BE RECORDED AND INCLUDED WITH THE SWPPP AND RETAINED ON SITE. THE OWNER SHALL RETAIN ALL RECORDS AFTER COMPLETION OF THE PROJECT.

SITE PLANS
THE CONTRACTOR SHALL PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR CONCRETE MANAGEMENT, CONCRETE SLURRY APPLICATION AREAS, WORK IN AND NEAR AREAS OF ENVIRONMENTAL SENSITIVITY, DEWATERING AREAS, AREAS IDENTIFIED AS "SITE MANAGEMENT PLAN AREAS" AND AS REQUESTED BY THE PROJECT ENGINEER. SUBMIT ALL SITE MANAGEMENT PLANS IN WRITING AND ALLOW A MINIMUM OF 10 CALENDAR DAYS DAYS FOR REVIEW BY THE PROJECT ENGINEER. WORK SHALL NOT BE ALLOWED TO COMMENCE IF A SITE MANAGEMENT PLAN IS REQUIRED UNTIL ACCEPTANCE HAS BEEN GRANTED BY THE PROJECT ENGINEER.

ENVIRONMENTAL REVIEW
THE REQUIREMENTS OF RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT AND THE CITY OF EDEN PRAIRIE ARE SATISFIED BY THE TEMPORARY MEASURES INCLUDED. THERE ARE NO ADDITIONAL STORMWATER MITIGATION MEASURES REQUIRED AS A RESULT OF AN ENVIRONMENTAL, ARCHAEOLOGICAL OR AGENCY REVIEW.

DRINKING WATER SUPPLY MANAGEMENT AREA (DWSMA), EMERGENCY RESPONSE AREA (ERA) AND KARST REGIONS
THE PROJECT IS NOT LOCATED IN AN ERA OR KARST AREA. THE PROJECT IS LOCATED IN A LOW VULNEREABILITY DWSMA.

SOIL TYPES
SOIL TYPES FOUND ON THIS PROJECT ARE VARIABLE. SOIL TYPES ENCOUNTERED IMMEDIATELY BENEATH THE TOPSOIL OR ROADWAY SECTIONS CAN PREDOMINANTLY BE CHARACTERIZED AS SILTY SAND, POORLY GRADED SAND WITH SILT, SANDY LEAN CLAY, AND LEAN CLAY.
SEE SPECIAL PROVISIONS FOR ADDITIONAL WATER RELATED PERMITS SUCH AS WATERSHED DISTRICT PERMITS, WETLAND PERMITS, ARMY CORPS OF ENGINEERS OR DNR PUBLIC WATERS WORK PERMIT.
FOR PUBLIC WATERS IN WHICH THE DNR HAS PROMULGATED "WORK IN WATER RESTRICTIONS" NO WORK SHALL OCCUR IN LAKES FROM APRIL1 - JUNE 30, IN NON-TROUT STREAMS FROM MARCH 15 - JUNE 15 OR IN TROUT STREAMS FROM SEPTEMBER 1 - APRIL 1. SEE DNR PERMIT FOR ADDITIONAL INFORMATION.

LAND FEATURE CHANGES
TOTAL DISTURBED AREA: 0.3 ACRES
TOTAL EXISTING IMPERVIOUS SURFACE AREA: 0.1 ACRES
TOTAL PROPOSED IMPERVIOUS SURFACE AREA: 0.1 ACRES
TOTAL PROPOSED NET CHANGE IN IMPERVIOUS SURFACE AREA: 0.0 ACRES

PROJECT CONTACTS
THE OWNER AND CONTRACTOR ARE RESPONSIBLE FOR THE IMPLEMENTATION OF THE SWPPP AND INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING AND AFTER CONSTRUCTION UNTIL THE NOTICE OF TERMINATION HAS BEEN FILED.

ORGANIZATION	CONTACT NAME	PHONE
CITY OF EDEN PRAIRIE	PATRICK SEJKORA	952-949-8360
HENNEPIN COUNTY	XXXX XXXX	XXX-XXX-XXXX
MINNESOTA DEPARTMENT OF NATURAL RESOURCES	PATTY FOWLER	612-708-7732
MINNESOTA POLLUTION CONTROL AGENCY	JOSH NORMAN	651-757-2389
RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT	JOSH MAXWELL	952-607-6512
SRF WATER RESOURCES (OR SWPPP DESIGNER)	DELANEY MOBERLY	763-475-0010

MPCA DUTY OFFICER 24 HOUR EMERGENCY NOTIFICATION: 651-649-5451
800-422-0798

LOCATION OF SWPPP REQUIREMENTS
THE REQUIRED SWPPP ELEMENTS MAY BE LOCATED IN MANY PLACES WITHIN THE PLAN SET AS WELL AS IN THE SPECIAL PROVISIONS, MNDOT SPEC BOOK (2022 EDITION), CONSTRUCTION DIARIES OR ON FILE WITH THE PROJECT OWNER. THE NOTES AND TABLE BELOW ARE INTENDED TO BE A QUICK REFERENCE FOR THE CONTRACTOR AND PROJECT ENGINEER TO USE IN THE FIELD. THERE MAY BE ADDITIONAL REQUIRED SWPPP ELEMENTS INCLUDED ON THE PROJECT THAT ARE NOT LISTED ON THIS SHEET. IN ADDITION, THE MINNESOTA NPDES/SDS CONSTRUCTION STORMWATER GENERAL PERMIT (NPDES PERMIT) SHOULD BE REVIEWED AND CONSULTED BY THE EROSION AND SEDIMENT CONTROL SUPERVISOR.

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	LOCATION
TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AND STAGING	SHEET NOS. 26
PERMANENT EROSION AND SEDIMENT CONTROL MEASURES	SHEET NOS. 26
DIRECTION OF FLOW	SHEET NOS. 26
FINAL STABILIZATION	SHEET NOS. 26
SOILS AND CONSTRUCTION NOTES	SHEET NOS. 2
DRAINAGE STRUCTURES	SHEET NOS. 19
DRAINAGE TABULATION	SHEET NOS. 19
EROSION AND SEDIMENT CONTROL DETAILS	SHEET NOS. 9 TO 14
EROSION CONTROL TABULATION	SHEET NOS. 26
TURF ESTABLISHMENT TABULATION	SHEET NOS. 26
STATEMENT OF ESTIMATED QUANTITIES	SHEET NOS. 2

NO	DATE	BY	CKD	APPR	REVISION
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Print Name: ENGINEER-6
Date _____ License # LIC#-6

CITY PROJECT NO. 23811

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CITY OF EDEN PRAIRIE
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 23 OF 28

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (SHEET 2 OF 3)

GENERAL SWPPP NOTES FOR CONSTRUCTION ACTIVITY

1. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION STORMWATER PERMIT AT ALL TIMES UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA (FORM IS AVAILABLE FROM MPCA WEBSITE). THE CONTRACTOR SHALL DEVELOP A CHAIN OF COMMAND WITH ALL OPERATORS ON THE SITE TO ENSURE THAT THE SWPPP SHALL BE IMPLEMENTED AND STAY IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE, THE ENTIRE SITE HAS UNDERGONE FINAL STABILIZATION, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE MPCA.

2. THE CONTRACTOR SHALL PREPARE A WRITTEN, NOT ORAL, WEEKLY SCHEDULE OF PROPOSED EROSION CONTROL ACTIVITIES FOR THE PROJECT ENGINEER'S APPROVAL AS PER MNDOT SPEC. 1717.2.

3. BURNING OF ANY MATERIAL IS NOT ALLOWED WITHIN PROJECT BOUNDARY.

4. THE CONTRACTOR SHALL PLACE STABILIZED CONSTRUCTION EXITS, AS NECESSARY, TO PREVENT TRACKING OF SEDIMENT ONTO PAVED SURFACES AND IN COMPLIANCE WITH THE NPDES PERMIT. STABILIZED CONSTRUCTION EXITS SHALL BE SUFFICIENTLY SIZED AND MAINTAINED TO PREVENT TRACK OUT. STABILIZED CONSTRUCTION EXITS SHALL BE INCIDENTAL.

5. ALL TOPSOIL IN DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED FOR LATER PLACEMENT. AVOID COMPACTION AS MUCH AS IS FEASIBLE IN ALL AREAS WHERE COMPACTION IS NOT REQUIRED FOR CONSTRUCTION. COMPACTION SHALL BE AVOIDED IN ALL AREAS DESIGNATED FOR INFILTRATION.

6. DO NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS. DELINEATE AREAS NOT TO BE DISTURBED PRIOR TO STARTING GROUND DISTURBING ACTIVITIES. IF IT BECOMES NECESSARY TO DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS OBTAIN WRITTEN PERMISSION PRIOR TO PROCEEDING. PRESERVE ALL BUFFERS (IF ANY) SHOWN ON THE PLANS.

7. DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS AND ROUTE STORMWATER AROUND UNSTABILIZED AREAS OF THE SITE WHENEVER POSSIBLE. PROVIDE EROSION CONTROL AND VELOCITY DISSIPATION DEVICES AS NEEDED TO PREVENT EROSION AND NUISANCE CONDITIONS.

8. PROVIDE STABILIZATION IN ANY TRENCHES CUT FOR DEWATERING OR SITE DRAINING PURPOSES.

9. TEMPORARY DEWATERING ACTIVITIES MAY BE REQUIRED. THEREFORE, IT IS POSSIBLE THAT A PERMIT FOR THE TEMPORARY APPROPRIATION OF WATERS OF THE STATE FROM MNDNR SHALL BE REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THIS PERMIT IF REQUIRED (FORMS ARE AVAILABLE FROM THE MNDNR WEBSITE). ALL TEMPORARY DEWATERING SHALL BE DISCHARGED TO AN APPROVED LOCATION FOR TREATMENT PRIOR TO DISCHARGE TO THE RECEIVING WATER. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SITE MANAGEMENT PLANS TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK ACCORDING TO SPEC 1717.2. TEMPORARY DEWATERING SHALL BE INCIDENTAL.

10. BASIN DRAINING ACTIVITIES OF TURBID OR SEDIMENT LADEN WATER SHALL BE DISCHARGED TO TEMPORARY SEDIMENT BASINS WHENEVER POSSIBLE. IN THE EVENT THAT IT IS NOT POSSIBLE TO DISCHARGE THE SEDIMENT LADEN WATER TO A TEMPORARY SEDIMENT BASIN THE WATER SHALL BE TREATED SO THAT IT DOES NOT CAUSE A NUISANCE CONDITION IN THE RECEIVING WATERS OR TO DOWNSTREAM LANDOWNERS.

11. IT IS NOT ANTICIPATED THAT POLYMERS, FLOCCULANTS OR OTHER SEDIMENTATION TREATMENT CHEMICALS SHALL BE USED. HOWEVER, IF THE USE OF SUCH CHEMICALS BECOMES NECESSARY TO COMPLY WITH PERMIT REQUIREMENTS, IT SHALL BE IN ACCORDANCE WITH THE NPDES PERMIT.

POLLUTION PREVENTION NOTES

1. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS REGARDING POLLUTION PREVENTION MANAGEMENT DURING CONSTRUCTION, WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, PROVIDING THE FOLLOWING (ITEMS LISTED ARE INCIDENTAL):
   A. WASHOUT AREAS FOR CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS FOR USE BY ALL SUBCONTRACTORS AND MATERIAL TESTING PERSONNEL. LOCATION OF WASHOUT AREAS SHALL BE IDENTIFIED BY SIGNAGE AND SHALL BE AT LEAST 200 FT FROM SITE MANAGEMENT PLAN REQUIREMENT AREAS (IF APPLICABLE) OR AREAS OF ENVIRONMENTAL SENSITIVITY, AND UTILIZE A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER THAT PREVENTS RUNOFF ONTO ADJACENT SOILS. AN ENGINEERED COLLECTION SYSTEM CAN ALSO BE USED IF IT IS APPROVED BY THE PROJECT ENGINEER.
   B. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE PROJECT ENGINEER FOR A CHEMICAL STORAGE AREA AND SHALL DESIGNATE AN AREA FOR FUELING AND MINOR MAINTENANCE OF CONSTRUCTION VEHICLES (INCLUDING WASHING) WITH MEANS TO CAPTURE ANY FUEL SPILLS. RUNOFF SHALL BE CONTAINED IN A TEMPORARY SEDIMENT BASIN OR OTHER EFFECTIVE CONTROL AND ALL WASTE GENERATED SHALL BE PROPERLY DISPOSED OF. NO ENGINE DEGREASING IS ALLOWED ON SITE.
   C. SOLID WASTE COLLECTION AND REMOVAL
   D. SECONDARY CONTAINMENT FOR STORAGE OF HAZARDOUS MATERIALS
   E. SECURED HAZARDOUS WASTE STORAGE CONTAINERS
   F. CHEMICAL SPILL KITS (SHALL BE PROVIDED AT EACH LOCATION WHERE CHEMICALS ARE USED OR STORED AND ANY LOCATION WHERE VEHICLES ARE FUELED OR MAINTAINED).
   G. PORTABLE RESTROOM FACILITIES THAT ARE ANCHORED TO PREVENT TIPPING

2. CHEMICALS SHALL BE KEPT IN A SECURE STORAGE AREA WITH RESTRICTED ACCESS IN SEALED CONTAINERS WHEN NOT IN USE. RETURN ALL CHEMICALS TO THE DESIGNATED STORAGE AREA BY THE END OF THE DAY UNLESS INFEASIBLE. CHEMICAL STORAGE CONTAINERS SHALL HAVE SECONDARY CONTAINMENT WHEN BEING USED OR STORED ON THE PROJECT SITE, AND PRODUCTS OR CHEMICALS THAT MAY LEACH POLLUTANTS SHALL BE UNDER COVER (PLASTIC SHEETING OR TEMPORARY ROOF). CHEMICAL SPILLS OF ANY KIND (OIL, FUEL, FERTILIZER, ETC.) SHALL BE CLEANED UP AND REMOVED FROM THE SITE IMMEDIATELY. THE CONTRACTOR SHALL HAVE A SPILL KIT ON SITE AT ALL TIMES.

POLLUTION PREVENTION NOTES (CONT.)

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CREATING AND FOLLOWING A WRITTEN DISPOSAL PLAN FOR ALL HAZARDOUS WASTE MATERIALS. THE PLAN SHALL INCLUDE HOW THE MATERIAL SHALL BE DISPOSED OF AND THE LOCATION OF THE DISPOSAL SITE AND SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO WORK ON SITE. LEAKS, SPILLS, OR OTHER RELEASES SHALL BE RESPONDED TO IN ACCORDANCE WITH MPCA SPILL CONTAINMENT AND REMEDIAL ACTION PROCEDURES.

4. THE CONTRACTOR SHALL USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT DISCHARGE OR PLACEMENT OF BITUMINOUS GRINDINGS, CUTTINGS, MILLINGS, AND OTHER BITUMINOUS WASTES FROM AREAS OF EXISTING OR FUTURE VEGETATED SOILS, AND ALL WATER CONVEYANCE SYSTEMS, INCLUDING INLETS, DITCHES AND CURB FLOW LINES.

5. THE CONTRACTOR SHALL USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT CONCRETE DUST, PARTICLES, SAW CUT SLURRY, PLANING WASTE AND OTHER CONCRETE WASTES FROM LEAVING PUBLIC RIGHT OF WAY, DEPOSITING IN EXISTING OR FUTURE VEGETATED AREAS OR ENTERING STORMWATER CONVEYANCE SYSTEM INCLUDING INLETS AND CURB FLOW LINES. ONSITE RELEASE OF CONCRETE SLURRY IS PERMISSIBLE IF MINNESOTA POLLUTION CONTROL GUIDANCE FOR ROAD CONSTRUCTION CONCRETE SLURRY AND THE REQUIREMENTS OF THE SPECIAL PROVISIONS ARE FOLLOWED.

EROSION CONTROL SUPERVISOR, INSPECTIONS AND MAINTENANCE NOTES

1. IN ACCORDANCE WITH SPEC. 2573.3 A1, THE CONTRACTOR SHALL PROVIDE A CERTIFIED EROSION CONTROL SUPERVISOR IN GOOD STANDING WHO IS KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BMPS. PROVIDE PROOF OF CERTIFICATION (UNIVERSITY OF MINNESOTA - CONSTRUCTION SITE MANAGEMENT) AT THE PRECONSTRUCTION MEETING. WORK SHALL NOT BE ALLOWED TO COMMENCE UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED. THE EROSION CONTROL SUPERVISOR IS INCIDENTAL.

2. THE EROSION CONTROL SUPERVISOR SHALL WORK WITH THE PROJECT ENGINEER TO OVERSEE THE IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING AND AFTER CONSTRUCTION UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA.

3. THE EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR COMPLYING WITH ALL THE INSPECTION AND MAINTENANCE REQUIREMENTS STATED IN THE NPDES PERMIT. INSPECTIONS OF THE ENTIRE CONSTRUCTION SITE SHALL OCCUR A MINIMUM OF ONCE EVERY SEVEN DAYS (3 DAYS FOR PROHIBITED WATERS) DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS (IN NO CASE SHALL THE TIME BETWEEN INSPECTIONS EXCEED 7 DAYS; 3 DAYS FOR PROHIBITED WATERS). RAINFALL AMOUNTS SHALL BE OBTAINED USING A PROPERLY MAINTAINED RAIN GAUGE ONSITE OR BY A WEATHER STATION THAT IS WITHIN ONE MILE. THE EROSION CONTROL SUPERVISOR SHALL THOROUGHLY INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS TO ENSURE INTEGRITY AND EFFECTIVENESS OF EACH BMP.

4. ALL INSPECTIONS AND MAINTENANCE CONDUCTED DURING CONSTRUCTION SHALL BE RECORDED IN WRITING WITHIN 24 HOURS AND THESE RECORDS SHALL BE RETAINED WITH THE SWPPP. INSPECTION REPORTS SHALL BE SUBMITTED TO THE PROJECT ENGINEER AND SWPPP DESIGNER IN A FORMAT APPROVED BY THE ENGINEER. INSPECTION RECORDS SHALL INCLUDE:
   A. DATE AND TIME OF INSPECTIONS;
   B. NAME OF PERSONS CONDUCTING INSPECTIONS;
   C. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS;
   D. CORRECTIVE ACTIONS TAKEN INCLUDING DATES, TIMES, AND THE PARTY COMPLETING MAINTENANCE ACTIVITIES;
   E. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCH IN 24 HOURS;
   F. LOCATION, DESCRIPTION AND PHOTO OF ANY DISCHARGES OFF THE PROJECT SITE.
   G. DOCUMENTS AND CHANGES MADE TO THE SWPPP.

5. THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS (INSPECTIONS MAY BE REDUCED UNDER CERTAIN CONDITIONS AS COVER IS ESTABLISHED AND CONDITIONS CHANGE AS DESCRIBED IN THE NPDES PERMIT):
   A. SILT FENCE SHALL BE REPAIRED, REPLACED OR SUPPLEMENTED WHEN IT BECOMES NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE SILT FENCE.
   B. INLET PROTECTION DEVICES SHOULD BE REPAIRED WHEN THEY BECOME NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT AND/OR DEPTH OF THE DEVICE.
   C. TEMPORARY SEDIMENT BASINS, IF REQUIRED, SHALL HAVE THE SEDIMENT REMOVED ONCE THE SEDIMENT HAS REACHED 1/2 THE STORAGE VOLUME.
   D. REMOVE ANY SEDIMENT DEPOSITED IN SURFACE WATERS. SEDIMENT SHALL BE REMOVED AND ANY AREA DISTURBED BY THE REMOVAL RESTABILIZED WITHIN 7 DAYS OF DISCOVERY. A SITE MANAGEMENT PLAN IS REQUIRED FOR WORK IN ANY SURFACE WATER AND APPROPRIATE AUTHORITIES SHALL BE CONTACTED PRIOR TO COMMENCING WORK.
   E. TRACKED SEDIMENT SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OF TRACKING ONTO PAVED SURFACES.
   F. ALL NONFUNCTIONAL BMPS SHALL BE REPAIRED, REPLACED, OR SUPPLEMENTED BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY (UNLESS NOTED OTHERWISE ABOVE).
   G. REINSTALL AS QUICKLY AS POSSIBLE ANY BMP REMOVED TO ACCOMMODATE SHORT TERM ACTIVITIES.
   H. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL BMPS UNTIL WORK HAS BEEN COMPLETED, SITE HAS GONE UNDER FINAL STABILIZATION, AND THE NOTICE OF TERMINATION HAS BEEN SUBMITTED TO THE MPCA IN ACCORDANCE WITH THE NPDES PERMIT. SEDIMENT REMOVAL AND MAINTENANCE OF BMPS IS INCIDENTAL.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ENGINEER-6

Date _____ License # LIC#-6

CITY PROJECT NO. 23811

DRAWN BY DRAWN-6
DESIGNED BY DESIGNED-6
CHECKED BY CHECKED-6
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 24 OF 28

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (SHEET 3 OF 3)

STABILIZATION AND SEDIMENT CONTROL NOTES

1. THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS SHALL BE PLACED AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND CAPTURE SEDIMENT ONSITE. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY REMOVAL WORK AND/OR GROUND DISTURBING ACTIVITIES AND SHALL BE MAINTAINED UNTIL THE POTENTIAL FOR EROSION HAS BEEN ELIMINATED. IF SEDIMENT CONTROLS ARE OVERLOADED (BASED ON FREQUENT FAILURE OR EXCESSIVE MAINTENANCE), ADDITIONAL UPGRADIENT OR REDUNDANT BMPS SHALL BE PLACED.

2. SEDIMENT CONTROL DEVICES SHALL BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UP GRADIENT LAND DISTURBING ACTIVITIES BEGIN. SEDIMENT CONTROL DEVICES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   A. PERIMETER CONTROL SHALL BE LOCATED ON THE CONTOUR TO CAPTURE OVERLAND, LOW-VELOCITY SHEET FLOWS DOWN GRADIENT OF ALL EXPOSED SOILS AND PRIOR TO DISCHARGING TO SURFACE WATERS. THE BMP SHALL BE J-HOOKED AT A MAXIMUM OF 100 FOOT INTERVALS AND EACH SECTION SHALL CONTAIN NO MORE THAN 1/4 ACRE OF DRAINAGE AREA.
   B. SEDIMENT DAMAGE FROM STOCKPILES SHALL BE MINIMIZED BY PLACING A ROW OF SUPER DUTY SILT FENCE A MINIMUM 5 FEET FROM THE TOE. IF THERE IS NOT ADEQUATE PROJECT AREA TO PLACE THE SILT FENCE MORE THAN 5 FEET FROM THE TOE OF THE SLOPE, THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE TO THE PROJECT ENGINEER FOR APPROVAL.
   C. DITCH CHECKS (IF REQUIRED) SHALL BE PLACED AS INDICATED ON THE PLANS DURING ALL PHASES OF CONSTRUCTION.
      1. TEMPORARY DITCH CHECKS (IF REQUIRED) SHALL CONSIST OF USING ROCK DITCH CHECKS, SEDIMENT CONTROL LOGS AND ROCK WEEPERS IN FRONT OF CULVERT INLETS. IN LIEU OF REMOVING TEMPORARY DITCH CHECKS, THE ROCK MAY BE PUSHED INTO THE GROUND.
      2. FILTER LOGS (IF REQUIRED) SHALL BE PLACED DURING PERMANENT TURF ESTABLISHMENT AT THE INTERVALS IDENTIFIED IN THE PLAN.
   D. FLOTATION SILT CURTAIN MAY BE USED AS PERIMETER CONTROL BUT ONLY FOR WORK ON THE SHORELINE OR BELOW THE WATERLINE. IMMEDIATELY AFTER THE CONSTRUCTION IN THE AREA IS COMPLETE, AN UPLAND BMP SHALL BE PLACED IF EXPOSED SOILS CONTINUE TO DRAIN TO THE SURFACE WATER.
   E. TEMPORARY SEDIMENT BASINS ARE REQUIRED WHERE TEN OR MORE ACRES DRAIN TO A COMMON LOCATION (FIVE IF DRAINING TO A SPECIAL OR IMPAIRED WATER).
      1. BASIN VOLUME SHALL BE A MINIMUM OF 1,800 CUBIC FEET PER ACRE OF DRAINAGE AREA TO THE BASIN (3,600 CUBIC FEET PER ACRE IF NO CALCULATIONS ARE PERFORMED)
      2. OUTLET SHALL ALLOW COMPLETE DRAWDOWN FOR MAINTENANCE AND A STABILIZED OVERFLOW. THE OUTLET SHALL WITHDRAW WATER FROM THE SURFACE EXCEPT DURING FROZEN CONDITIONS. TEMPORARY POND OUTLETS OR TEMPORARY MODIFICATIONS TO PERMANENT POND OUTLETS TO COMPLY WITH NPDES PERMIT REQUIREMENTS FOR TEMPORARY SEDIMENT BASINS SHALL BE INCIDENTAL.
      3. IF A TEMPORARY BASIN OF THE REQUIRED SIZE IS INFEASIBLE THE REASONS SHALL BE DOCUMENTED IN THE SWPPP AND ALTERNATE BMPS SHALL BE PLACED.

3. PRESERVE A NATURAL BUFFER OF AT LEAST 50 FEET (100 FEET IF WITHIN 1 MILE OF AND DRAINS TO A SPECIAL OR IMPAIRED WATER) BETWEEN DISTURBED AREAS AND FLOWS TO A SURFACE WATER (NOT REQUIRED AT DITCHES OR STORMWATER CONVEYANCE CHANNELS, STORM DRAIN INLETS OR SEDIMENT BASINS). IF A BUFFER IS INFEASIBLE, PROVIDE AS LARGE A BUFFER AS POSSIBLE AND REDUNDANT SEDIMENT CONTROLS.

4. STORM SEWER INLETS SHALL BE PROTECTED AT ALL TIMES WITH THE APPROPRIATE INLET PROTECTION FOR EACH SPECIFIC PHASE OF CONSTRUCTION. PROVIDE INLET PROTECTION DEVICES WITH EMERGENCY OVERFLOW CAPABILITIES. SILT FENCE PLACED IN THE INLET GRATE IS NOT AN ACCEPTABLE INLET PROTECTION BMP FOR GRADING OPERATIONS (THIS BMP SHALL BE ACCEPTED ONLY FOR SHORT INTERVALS DURING MILLING OR PAVING OPERATIONS). INLET PROTECTION DEVICES MAY NEED TO BE PLACED MULTIPLE TIMES IN THE SAME LOCATION OVER THE LIFE OF THE CONTRACT. INLET PROTECTION DEVICES SHALL BE PAID FOR ONCE PER INLET REGARDLESS OF THE NUMBER OF TIMES THE BMP IS PLACED. ALL STORM SEWER INLET PROTECTION DEVICES SHALL BE KEPT IN GOOD FUNCTIONAL CONDITION AT ALL TIMES. IF THE PROJECT ENGINEER DEEMS AN INLET PROTECTION DEVICE TO BE NONFUNCTIONAL, IN POOR CONDITION, INEFFECTIVE OR NOT APPROPRIATE FOR THE CURRENT CONSTRUCTION ACTIVITIES IT SHALL BE REPLACED WITH A SUITABLE ALTERNATIVE AT NO COST TO THE OWNER.

5. PAVEMENT SURFACES SHALL BE SWEPT WITHIN 24 HOURS OF DISCOVERY OF SEDIMENT OR TRACKING ONTO PAVEMENT THAT DRAINS TO CURB, INLETS, DITCHES OR PONDS. PAVEMENT SHALL BE LIGHTLY WETTED PRIOR TO SWEEPING. THIS WORK IS INCIDENTAL.

6. OUTLETS INTO SURFACE WATERS SHALL BE STABILIZED WITH ENERGY DISSIPATION WITHIN 24 HOURS OF BEING CONSTRUCTED.

7. DITCHES AND EXPOSED SOILS SHALL BE KEPT IN AN EVEN ROUGH GRADED CONDITION IN ORDER TO BE ABLE TO APPLY EROSION CONTROL MULCHES AND BLANKETS.

8. INITIATE STABILIZATION OF ALL EXPOSED SOIL AND STOCKPILE AREAS IMMEDIATELY AFTER CONSTRUCTION ACTIVITY ON THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED AND WILL NOT RESUME FOR A PERIOD EXCEEDING 7 DAYS. TEMPORARY OR PERMANENT STABILIZATION SHALL BE COMPLETED WITHIN NO MORE THAN 7 DAYS. ALL EXPOSED SOIL WITHIN 200 LINEAL FEET OF AND DRAINING TO A PUBLIC WATER WITH "WORK IN WATER RESTRICTIONS" AND DURING SPECIFIED FISH SPAWNING TIME FRAMES, SHALL BE STABILIZED WITHIN 24 HOURS. IN MANY INSTANCES, THIS SHALL REQUIRE STABILIZATION TO OCCUR MORE THAN ONCE DURING ROUGH GRADING. RAPID STABILIZATION METHOD 3 SHALL BE USED TO PROVIDE TEMPORARY COVER IN THESE AREAS AS APPROPRIATE. SUBSTITUTE SEED MIXTURE 21-112 OR 21-111 FOR THE SPECIFIED SEED MIXTURE AS APPROPRIATE FOR THE SEASON. SEE NPDES PERMIT FOR EXCEPTIONS.

STABILIZATION AND SEDIMENT CONTROL NOTES (CONT.)

9. THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH THAT DRAINS WATER FROM THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE CONSTRUCTION SITE, SHALL BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE OR POINT OF DISCHARGE TO ANY SURFACE WATER. STABILIZATION SHALL OCCUR WITHIN 24 HOURS OF CONNECTION TO A SURFACE WATER, EXISTING GUTTER, STORM SEWER INLET, DRAINAGE DITCH, OR OTHER STORMWATER CONVEYANCE SYSTEM ACCORDING TO SPEC 1717.2. RAPID STABILIZATION METHOD 4 SHALL BE USED TO STABILIZE THESE AREAS (SUBSTITUTE SEED MIXTURE 21-112 OR 21-111 FOR THE SPECIFIED SEED MIXTURE AS APPROPRIATE FOR THE SEASON). THE REMAINDER OF THE DITCH SHALL BE STABILIZED WITHIN 14 DAYS (7 DAYS IF IT IS WITHIN 1 MILE OF AND DRAINS TO A SPECIAL OR IMPAIRED WATER)OF CONNECTING TO THE SURFACE WATER. PERMANENT EROSION CONTROL BLANKET OR RAPID STABILIZATION METHOD 4 (SUBSTITUTE SEED MIXTURE 21-112 OR 21-111 FOR THE SPECIFIED SEED MIXTURE AS APPROPRIATE FOR THE SEASON) SHALL BE USED TO STABILIZE THESE AREAS AS INDICATED IN THE PLANS. IN LOCATIONS WHERE THE DITCH SLOPE IS LESS THAN 2 PERCENT, DISC ANCHORED MULCH AND HYDRAULIC SOIL STABILIZERS MAY BE USED FOR DITCH BOTTOM STABILIZATION AS INDICATED IN THE PLANS OR WITH THE APPROVAL OF THE ENGINEER.

10. ALL EXPOSED SOIL AREAS SHALL BE STABILIZED PRIOR TO THE ONSET OF WINTER. ANY WORK STILL BEING PERFORMED SHALL BE SNOW MULCHED, SEEDED, OR BLANKETED WITHIN THE TIME FRAMES LISTED IN THE NPDES PERMIT.

11. ALL TOPSOIL BERMS SHALL BE STABILIZED AS FOLLOWS:
    A. BETWEEN APRIL 1 - AUGUST 31, SEED WITH SEED MIXTURE 21-111
    B. BETWEEN SEPTEMBER 1 AND MARCH 31, SEED WITH SEED MIXTURE 21-112 AND TOP WITH RAPID STABILIZATION 2.

12. TILLING FOR BEDS OR TREE HOLES SHALL BE PLANTED AND MULCHED WITH WOODCHIP WITHIN 7 DAYS OR STRAW MULCHED UNTIL PLANTING OPERATIONS CAN BE COMPLETED. FILTER LOGS SHALL BE PLACED, AS NEEDED, TO TRAP SEDIMENT ON THE LOWER EDGE OF BEDS OR TREE HOLES. FILTER LOGS SHALL BE LEFT TO PHOTO DEGRADE.

MPCA CONSTRUCTION STORMWATER SPECIAL WATERS MAP

MAP NOT TO SCALE.
MAP COURESY OF Esri Community Maps Contributors, Metropolitan Council, MetroGIS, Three Rivers Park District, * OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA △ Esri, NASA, NGA, USGS, FEMA △ MPCA
https://gisdata.mn.gov/dataset/impaired-waters-viewer

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: ENGINEER-6
Date _____ License # LIC#-6

CITY PROJECT NO. 23811

DRAWN BY DRAWN-6
DESIGNED BY DESIGNED-6
CHECKED BY CHECKED-6
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
RAINBOW DRIVE CULVERT REPLACEMENT

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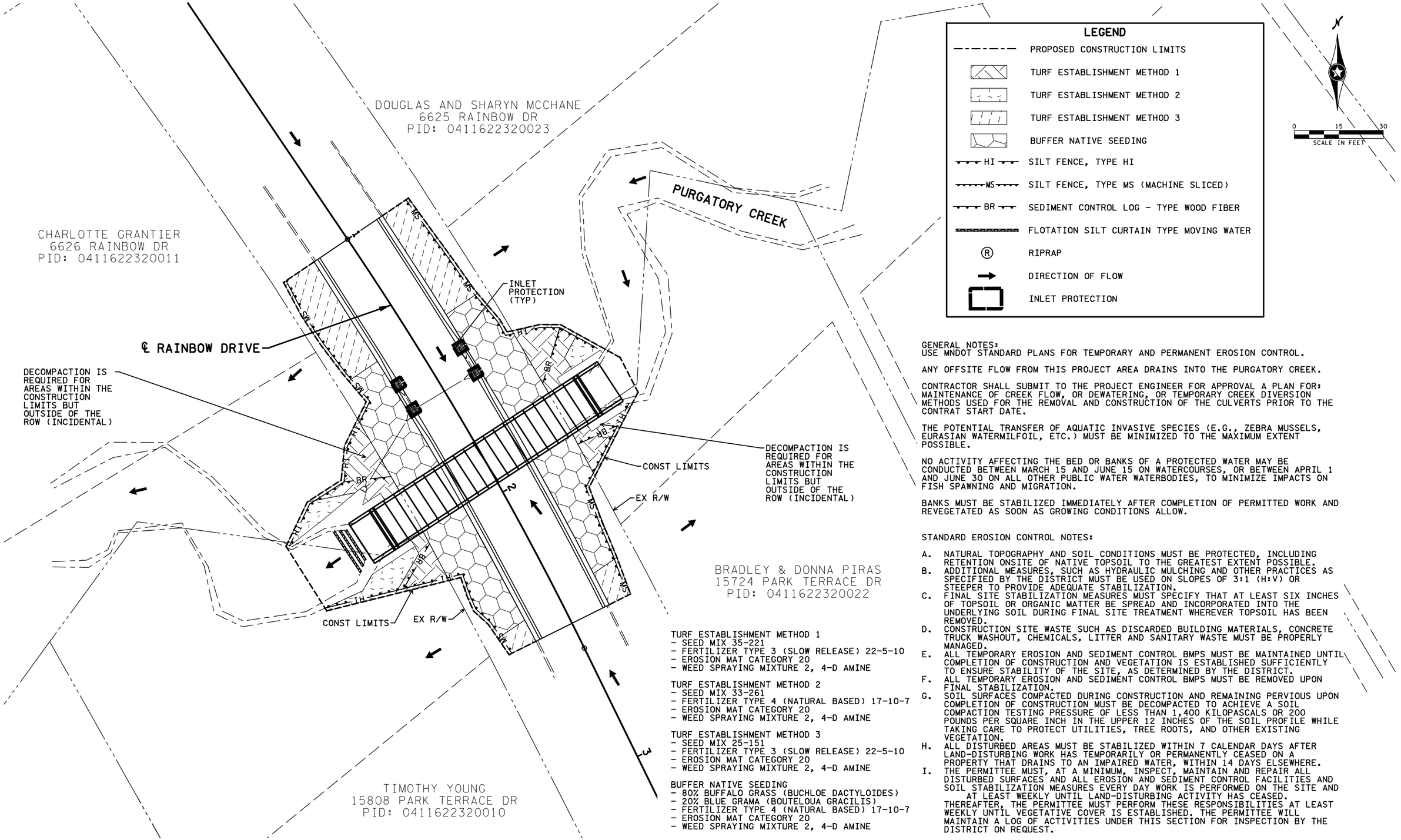

TURF ESTABLISHMENT METHOD 1
- SEED MIX 35-221
- FERTILIZER TYPE 3 (SLOW RELEASE) 22-5-10
- EROSION MAT CATEGORY 20
- WEED SPRAYING MIXTURE 2, 4-D AMINE

TURF ESTABLISHMENT METHOD 2
- SEED MIX 33-261
- FERTILIZER TYPE 4 (NATURAL BASED) 17-10-7
- EROSION MAT CATEGORY 20
- WEED SPRAYING MIXTURE 2, 4-D AMINE

TURF ESTABLISHMENT METHOD 3
- SEED MIX 25-151
- FERTILIZER TYPE 3 (SLOW RELEASE) 22-5-10
- EROSION MAT CATEGORY 20
- WEED SPRAYING MIXTURE 2, 4-D AMINE

BUFFER NATIVE SEEDING
- 80% BUFFALO GRASS (BUCHLOE DACTYLOIDES)
- 20% BLUE GRAMA (BOUTELOUA GRACILIS)
- FERTILIZER TYPE 4 (NATURAL BASED) 17-10-7
- EROSION MAT CATEGORY 20
- WEED SPRAYING MIXTURE 2, 4-D AMINE

GENERAL NOTES:
USE MNDOT STANDARD PLANS FOR TEMPORARY AND PERMANENT EROSION CONTROL.

ANY OFFSITE FLOW FROM THIS PROJECT AREA DRAINS INTO THE PURGATORY CREEK.

CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL A PLAN FOR: MAINTENANCE OF CREEK FLOW, OR DEWATERING, OR TEMPORARY CREEK DIVERSION METHODS USED FOR THE REMOVAL AND CONSTRUCTION OF THE CULVERTS PRIOR TO THE CONTRAT START DATE.

THE POTENTIAL TRANSFER OF AQUATIC INVASIVE SPECIES (E.G., ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC.) MUST BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE.

NO ACTIVITY AFFECTING THE BED OR BANKS OF A PROTECTED WATER MAY BE CONDUCTED BETWEEN MARCH 15 AND JUNE 15 ON WATERCOURSES, OR BETWEEN APRIL 1 AND JUNE 30 ON ALL OTHER PUBLIC WATER WATERBODIES, TO MINIMIZE IMPACTS ON FISH SPAWNING AND MIGRATION.

BANKS MUST BE STABILIZED IMMEDIATELY AFTER COMPLETION OF PERMITTED WORK AND REVEGETATED AS SOON AS GROWING CONDITIONS ALLOW.

STANDARD EROSION CONTROL NOTES:

A. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
B. ADDITIONAL MEASURES, SUCH AS HYDRAULIC MULCHING AND OTHER PRACTICES AS SPECIFIED BY THE DISTRICT MUST BE USED ON SLOPES OF 3:1 (H:V) OR STEEPER TO PROVIDE ADEQUATE STABILIZATION.
C. FINAL SITE STABILIZATION MEASURES MUST SPECIFY THAT AT LEAST SIX INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE TREATMENT WHEREVER TOPSOIL HAS BEEN REMOVED.
D. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
E. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE, AS DETERMINED BY THE DISTRICT.
F. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION.
G. SOIL SURFACES COMPACTED DURING CONSTRUCTION AND REMAINING PERVIOUS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED TO ACHIEVE A SOIL COMPACTION TESTING PRESSURE OF LESS THAN 1,400 KILOPASCALS OR 200 POUNDS PER SQUARE INCH IN THE UPPER 12 INCHES OF THE SOIL PROFILE WHILE TAKING CARE TO PROTECT UTILITIES, TREE ROOTS, AND OTHER EXISTING VEGETATION.
H. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED ON A PROPERTY THAT DRAINS TO AN IMPAIRED WATER, WITHIN 14 DAYS ELSEWHERE.
I. THE PERMITTEE MUST, AT A MINIMUM, INSPECT, MAINTAIN AND REPAIR ALL DISTURBED SURFACES AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND-DISTURBING ACTIVITY HAS CEASED. THEREAFTER, THE PERMITTEE MUST PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED. THE PERMITTEE WILL MAINTAIN A LOG OF ACTIVITIES UNDER THIS SECTION FOR INSPECTION BY THE DISTRICT ON REQUEST.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Z. HEIMER

Date _____ License # 58755

CITY PROJECT NO. 23811

DRAWN BY DRAWN-1
DESIGNED BY DESIGNED-1
CHECKED BY CHECKED-1
COMM. NO. 16468

SRF

CITY OF EDEN PRAIRIE

EROSION CONTROL AND TURF ESTABLISHMENT PLAN

RAINBOW DRIVE CULVERT REPLACEMENT

SHEET 26 OF 28

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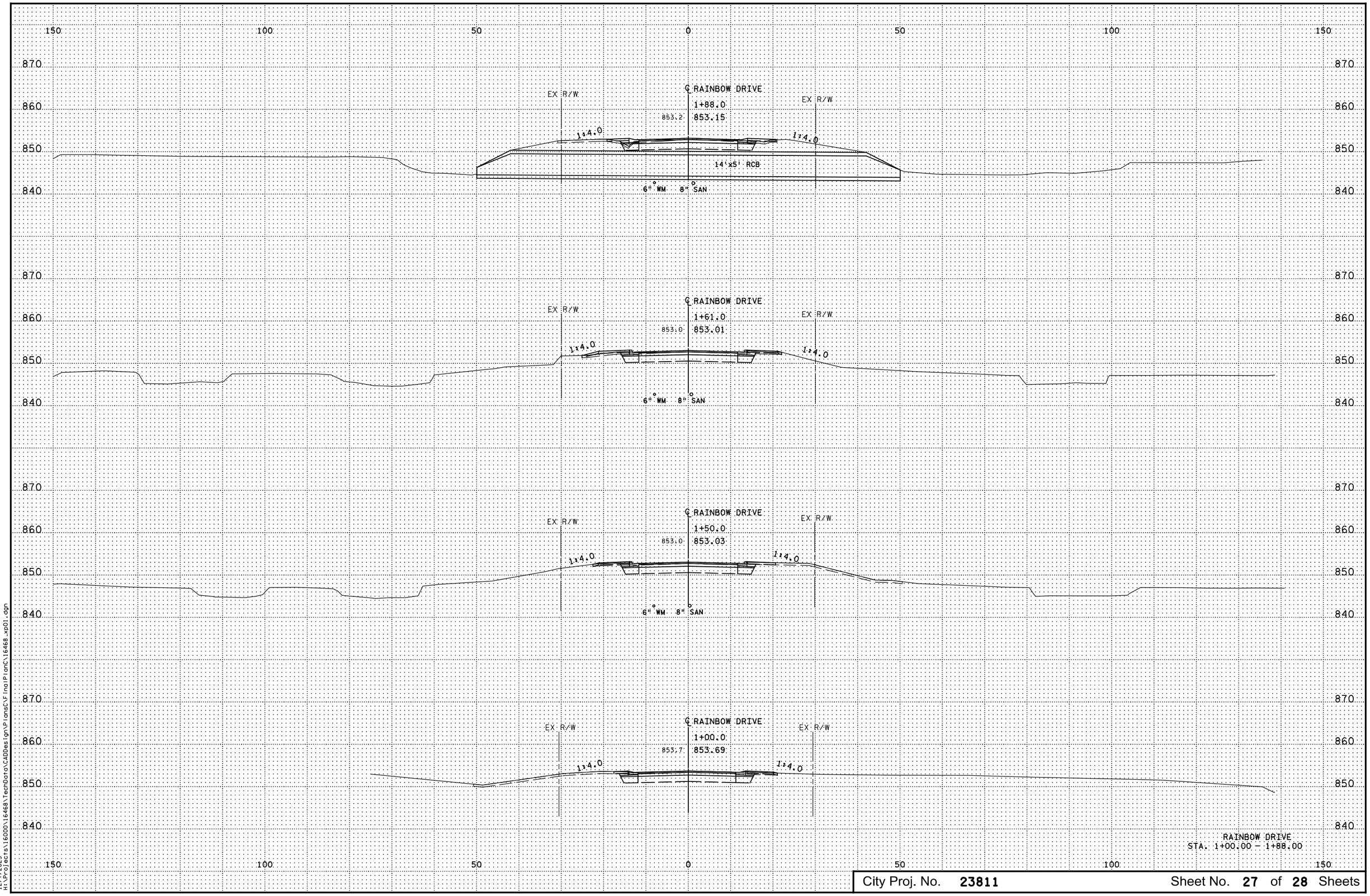

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EX. R/W

℄ RAINBOW DRIVE

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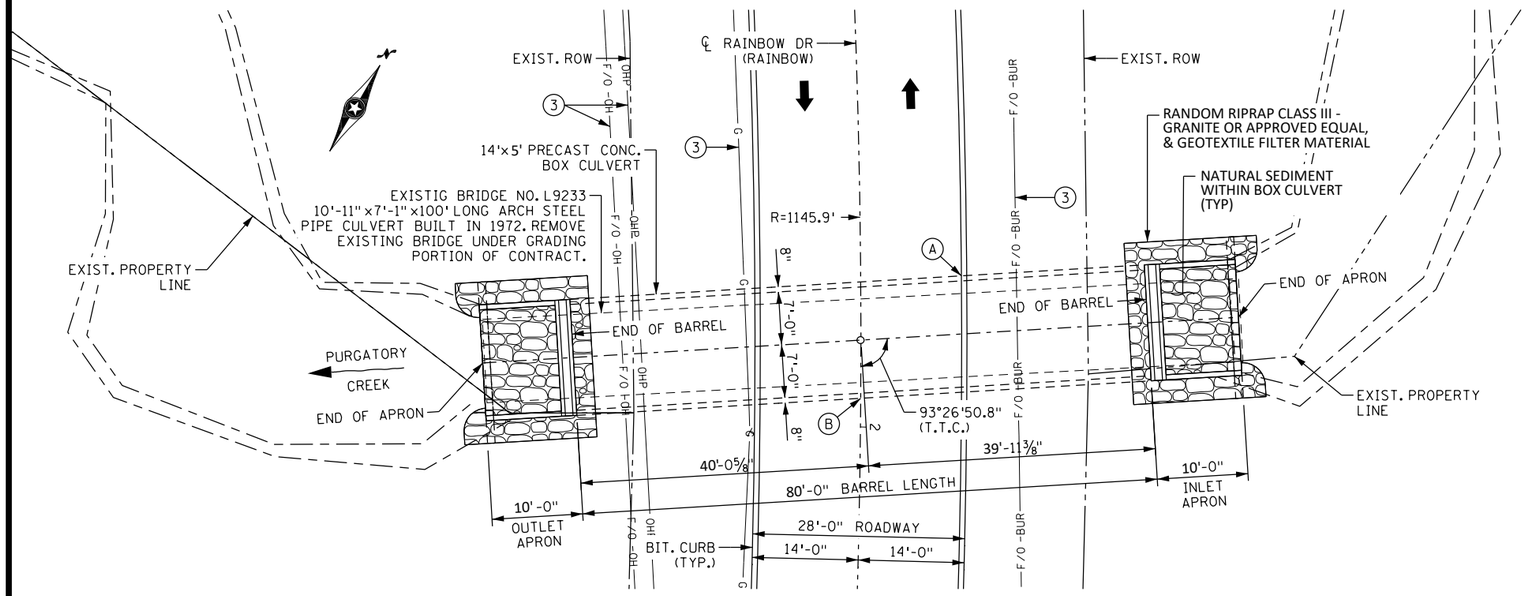
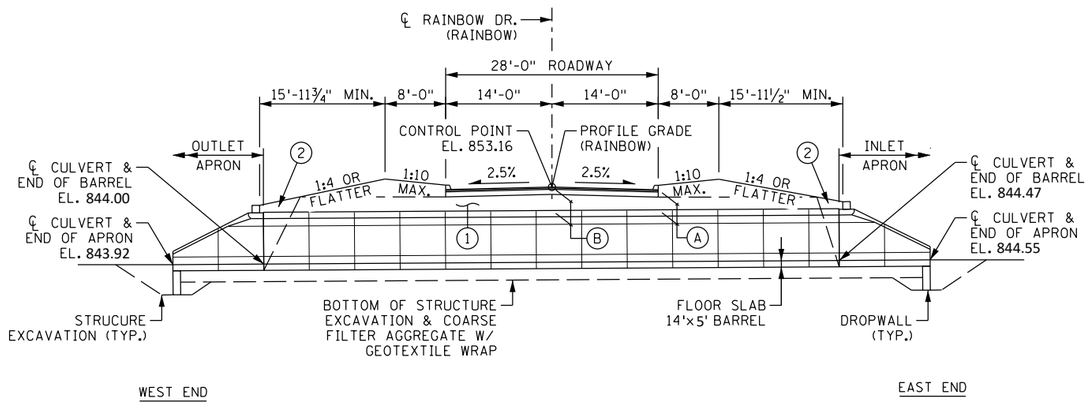


GENERAL PLAN



GENERAL ELEVATION

LIST OF SHEETS

DESIGN DATA

DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MnDOT BRIDGE DESIGN MANUAL

HL-93 LIVE LOAD

BARREL INSIDE WIDTH =	14'-0"
BARREL INSIDE HEIGHT =	5'-0"
BARREL LENGTH =	80'-0"
EST. MIN. FILL DEPTH (A) =	2.54'
EST. MAX. FILL DEPTH (B) =	3.14'
SKEW ANGLE =	0°0'0.0"

DESIGN SPEED:
OVER = XX MPH
UNDER = N/A

20XX PROJECTED TRAFFIC VOLUMES:

ROADWAY OVER	ROADWAY UNDER
T.B.D.	N/A

HL-93 LRFR
BRIDGE OPERATING RATING FACTOR RF = 1.3

CONSTRUCTION NOTES

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE "SUPPLEMENTAL SPECIFICATIONS" DATED SEPTEMBER 2022 SHALL GOVERN.

SEE SPECIAL PROVISIONS FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS.

ALL EXPOSED CONCRETE EDGES SHALL BE FORMED WITH A 1/2" OR 3/4" CHAMFER UNLESS OTHERWISE NOTED.

CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPEC. 2411 AND 2412, EXCEPT AS NOTED.

REFER TO REMAINDER OF GRADING PLAN FOR SUPERSTRUCTURE EXCAVATION AND BACKFILL SPEC. 2451.

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

NOTES:

T.T.C. DENOTES TANGENT TO CURVE

SEE RIGHT-OF-WAY PLANS FOR RIGHT-OF-WAY & PROPERTY INFORMATION.

(1) SELECT GRANULAR EMBANKMENT PER 3149.2.B.2.

(2) PLASTIC SOIL CAP.

(3) EXISTING UTILTY TO REMAIN. PROTECT AND MAINTAIN FACILITY DURING CONSTRUCTION. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.

CITY OF EDEN PRAIRIE

BRIDGE NO. 27J82

RAINBOW DRIVE OVER PURGATORY CREEK
0.1 MILES SOUTH OF JUNCTION OF
C.S.A.H. 4 & RAINBOW DRIVE
IN THE CITY OF EDEN PRAIRIE
SINGLE BARREL BOX CULVERT
1 - 14' X 5' BOX CULVERT BARREL

BRIDGE I.D. NO. 513

GENERAL PLAN & ELEVATION

SEC. 04 T 116 N R 22 W
CITY OF EDEN PRAIRIE HENNEPIN COUNTY

CITY PROJECT NO. 23811, (RAINBOW DR) STA. 1+88

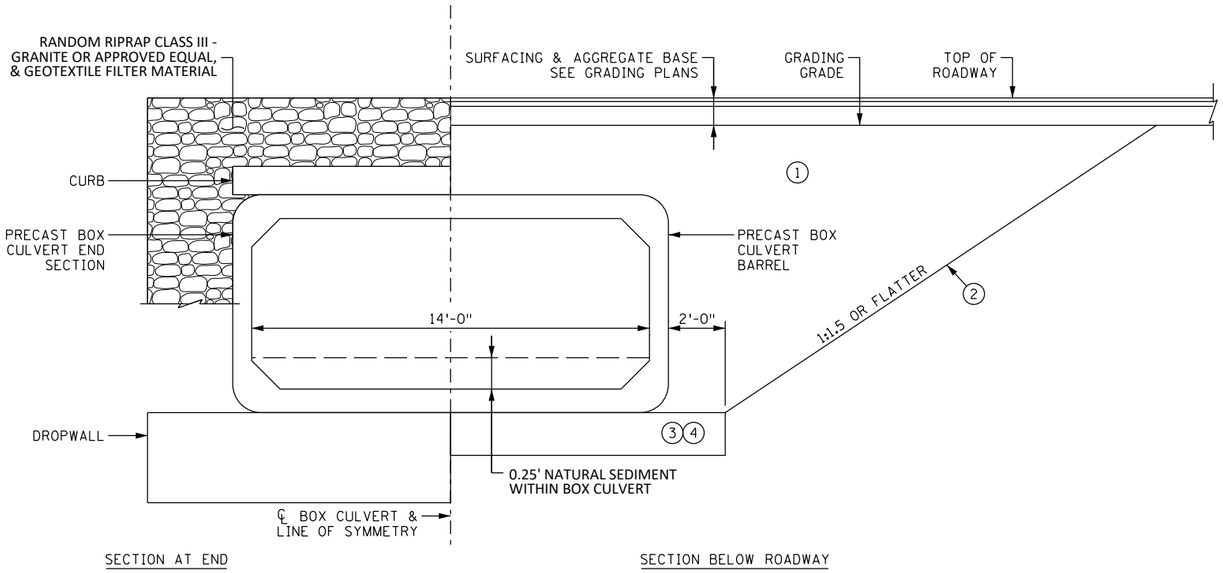
CERTIFIED BY _____ xx-xx-2023
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: CASEY E. BLACK LIC. NO. 49163

TITLE: GENERAL PLAN & ELEVATION

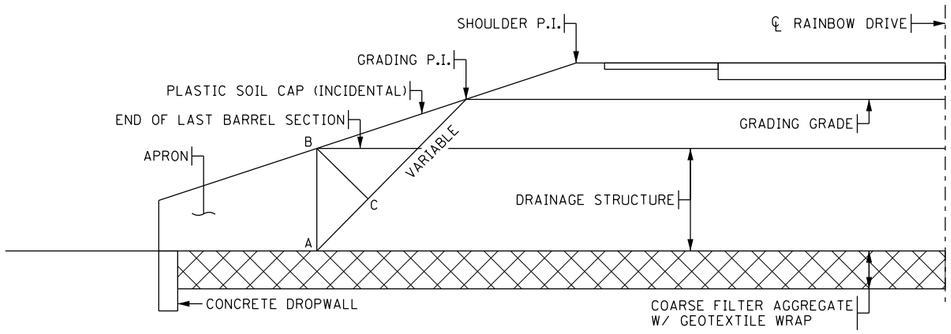
DES: C. BLACK	DR: C. BLACK	APPROVED:
CHK: TBD	CHK: TBD	

SHEET NO. 1 OF 10 SHEETS

BRIDGE NO. 27J82



TRANSVERSE SECTION



PLASTIC SOIL CAP DETAIL

PLASTIC SOIL CAP NOTES

PLASTIC SOIL CAP TO CONSIST OF 50% MIN. PASSING THE NO. 200 SIEVE AND 20% MIN. CLAY SIZE PARTICLES.

PAID FOR AS COMMON EMBANKMENT.

WIDTH OF PLASTIC SOIL CAP:
- A) FOR PLASTIC SOIL EMBANKMENT - FULL WIDTH OF THE GRANULAR TREATMENT PLUS 2'-0" ON EACH END.
- B) FOR GRANULAR SOIL EMBANKMENT - A MINIMUM OF ONE DIAMETER OR WIDTH OF STRUCTURE ON EITHER SIDE OF THE STRUCTURE.

THE TREATMENT IS NORMALLY REQUIRED ON THE INLET END.

THE THICKNESS OF THE PLASTIC SOIL CAP (B-C) IS 3'-0" MINIMUM AND 6'-0" MAXIMUM.
- A) FILL HEIGHTS LESS THAN 15'-0".
  - NORMALLY EXTEND THE LINE THRU (A-C) TO GRADING P.I. HOWEVER, IF THIS RESULTS IN A THICKNESS (B-C) GREATER THAN 6'-0", REDUCE (B-C) TO 6'-0" OR LESS AND INTERSECTION THE FILL SLOPE RATHER THAN THE P.I.
- B) FILL HEIGHTS GREATER THAN 15'-0".
  - THE LINE THRU (A-C) NEED NOT INTERSECT THE GRADING P.I. INSTEAD INTERSECT THE FILL SLOPE AT A POINT NOT LESS THAN 5'-0" ABOVE THE STRUCTURE MAINTAINING AT LEAST A MINIMUM THICKNESS (B-C) OF 3'-0".

BR	SCHEDULE OF QUANTITIES FOR BRIDGE 27J82		
ITEM NO.	ITEM	UNIT	QUANTITY
2106.507	SELECT GRANULAR EMBANKMENT (CV)	CU YD	621 (P)
2108.504	GEOTEXTILE FABRIC TYPE 4	SQ YD	461
2411.601	STRUCTURE EXCAVATION	LUMP SUM	1
2412.502	14X5 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	2
2412.503	14X5 PRECAST CONCRETE BOX CULVERT	LIN FT	80
2451.507	COARSE FILTER AGGREGATE (CV)	CU YD	106 (P)
(5) 2511.507	RANDOM RIPRAP CLASS III	CU YD	75
2573.601	TEMPORARY STREAM DIVERSION SYSTEM	LUMP SUM	1

SEE SPECIAL PROVISIONS DIVISION SB FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS, UNLESS NOTED OTHERWISE.

NOTES:

SLOPING AND BENCHING FOR EXCAVATIONS GREATER THAN 20'-0" DEEP SHALL BE DESIGNED BY A REGISTERED ENGINEER.

(1) SELECT GRANULAR EMBANKMENT PER 3149.2.B.2. MAXIMUM EMBANKMENT PARTICLE SIZE WITHIN 2'-0" OF CULVERT IS 3" PER SPEC. TABLE 2106-4.

(2) OVER EXCAVATION BENEATH TAPERS IS NOT PERMITTED UNLESS REQUIRED BY OSHA (TYP.).

(3) 1'-6" OF COARSE FILTER AGGREGATE PER 3149.2.H COMPACTED TO THE QUALITY COMPACTION REQUIREMENTS OF SPEC. 2211.3.D.2.b. WRAP WITH GEOTEXTILE FABRIC TYPE 4 PER SPEC. 3733. SEAM ALL FABRIC SIDES AND ENDS PER SPEC. TABLE 3733-1 INCLUDING FOOTNOTE (e) OR OVERLAP A MINIMUM OF 3'-0" ALL AT NO ADDITIONAL COST.

(4) IF APPROVED BY THE ENGINEER IN DRY CONDITIONS THE CONTRACTOR MAY SUBSTITUTE 2'-0" MINIMUM THICKNESS COMPACTED FINE AGGREGATE BEDDING PER 3149.2.G.1. COMPACT PER REQUIREMENTS OF SPEC. 2211.

(5) ITEM INCLUDES PAYMENT FOR TYPE 7 GEOTEXTILE.

CITY PROJECT NO. 23811, (RAINBOW DR) STA. 1+88

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — xx-xx-2023 DATE

NAME: CASEY E. BLACK LIC. NO. 49163

TITLE: TRANSVERSE SECTION, DETAILS & QUANTITIES

DES: C. BLACK | DR: C. BLACK | APPROVED:

CHK: TBD | CHK: TBD

SHEET NO. 2 OF 10 SHEETS

BRIDGE NO. 27J82