Permit Application Review

Permit No. 2021-007
Received complete: August 23, 2021

Applicant:	Patrick Sejkora; City of Eden Prairie
Consultant:	Dustin DeFelice; Bolton & Menk, Inc.
Project:	Old Shady Oak Road Culvert Improvements
Location:	Old Shady Oak Road, Chamberlain Court and West Cherokee Trail: Eden Prairie
Rule(s):	2, 3, 4, 5, and 6
Reviewer(s):	LLH and BCO

General Background & Comments

The City of Eden Prairie (City) is proposing drainage system improvements including the replacement of several existing culverts along Chamberlain Court, Old Shady Oak Road, and Cherokee Trail in Eden Prairie. The project area is located northeast of Bryant Lake in Eden Prairie.

Past inundation of Chamberlain Court prompted the City to commission multiple studies to evaluate the flooding problem(s) within the project area. The City has reported that moderate storm events (greater than 2.9 inches) result in Chamberlain Court to be overtopped, restricting access to eight residences. Additionally, the City has identified stormwater conveyance limitations with the Cherokee Trail and Old Shady Oak Road drainage system(s).

The drainage patterns within the project area are complex, as stormwater from a portion of Minnetonka and Eden Prairie is tributary to the area and conveyed through a series of ponds and wetlands via storm sewer prior to discharging to Bryant Lake. Stormwater runoff from Chamberlain Court discharges to a wetland complex located west of Old Shady Oak Road between Chamberlain Court and West Cherokee Trail (identified as subwatershed BL-28A1). The 240- acre drainage area to this wetland includes approximately 105 acres in the City of Minnetonka. From this wetland complex, stormwater is conveyed under Old Shady Oak Road to the large wetland complex located immediately north of the Margret A. Cargill (MAC) Philanthropies property and east of Old Shady Oak Road (identified as subwatershed BL-30B). The outlet from this wetland flows south under Old Shady Oak Road/Rowland Road to a ravine, on Three Rivers Park District property, and ultimately to Bryant Lake.

Under a cooperative agreement, the City has utilized the existing Nine Mile Creek Watershed District (District) XPSWMM model, the best available data at the time of the application submission, to evaluate existing drainage patterns, inundation extents, and flooding duration in the project area. The XPSWMM model was used to evaluate the proposed storm sewer system modifications to reduce flooding and flood duration along Chamberlain Court and Old Shady Oak Road in the vicinity of Cherokee Trial. The XPSWMM model was used to simulate several Atlas 14 design rainfall events (2-, 10-, and 100-year, 24-hour events) for pre-project

and post-project conditions. Results from the analysis are discussed in Sections 2.0, 3.0 and 6.0 of this report.

The project proposes drainage system modifications to alleviate localized road flooding by increasing the conveyance of stormwater to the wetland complex north of the MAC Philanthropies property. A summary of the subwatersheds within the project area, existing subwatershed outlet characteristics, and proposed outlet drainage system improvements is provided in Table 1 below.

Table 1: Existing Subwatershed Outlet Characteristics and Proposed Drainage Improvements

Subwatershed	Subwatershed Location	Existing Subwatershed Outlet Characteristics	Proposed Outlet Drainage Improvements
BL-28B2	North of Chamberlain Ct	Drains to BL-28A1 through a 15-inch CMP under Chamberlain Ct	Remove 15-inch CMP and install dual 24-inch RCP pipes
BL-28A1	Between Chamberlain Ct and Cherokee Tr, West of Old Shady Oak Rd	Drains to BL-28A2 through a 15-inch RCP	Remove 15-inch RCP and 24-inch CMP. Install dual 24-inch RCP pipes
BL-28A2	Between Chamberlain Ct and Cherokee Tr, West of Old Shady Oak Rd	Drains to BL-30B through a 24-inch CMP under Old Shady Oak Rd	
BL-30-B	North of MAC Philanthropies property and East of Old Shady Oak Rd	Drains through an outlet ultimately controlled by an 18-inch RCP under Old Shady Oak Rd. The outlet discharges to a steep ravine on Three Rivers Park District property that ultimately discharges to Bryant Lake	No modifications proposed

As identified in Table 1, the project proposes replacement of the existing 15-inch culvert beneath Chamberlain Court with dual 24-inch culverts to increase hydraulic capacity and reduce flooding in the project area. Additionally, the existing 15- and 24-inch culverts beneath and adjacent to Old Shady Oak Road are proposed to be replaced with dual 24-inch culverts to increase hydraulic conveyance through the wetland complexes and reduce roadway flooding.

The District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project as a result of land-altering activities proposed below the 100-year frequency floodplain of four wetlands in the project area.

The District's Wetland Management Rule 3.0 applies to the project because land-disturbing activities are proposed within or upgradient of four wetlands within the project area. The District is the Local Governing Unit (LGU) responsible for administering the Wetland Conservation Act (WCA) in Eden Prairie.

The District's Stormwater Management Rule 4.0 and Erosion Control Rule 5.0 apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 4.2.1a and b and 5.2.1a and b, respectively. The project is considered a linear project. As stated in Rule 4.2.4, linear projects creating less than one (1) acre of new or additional impervious area (0 acres of net new impervious area is proposed to be created) are exempt from the stormwater requirements of Rule 4.3.1 or 4.3.2.

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project because stormwater infrastructure improvements are proposed within the bed or bank of the wetlands/water basins (defined as an enclosed natural depression with definable banks capable of retaining water) in the project area, Rule 6.2.

The project site information includes the following:

- Total Site Area: 0.14 acres
- Disturbed and Reconstructed Impervious Area: 0.02 acres
- Increase in Impervious Area: 0 acres
- Total Disturbed Area: 0.14 acres

Exhibits

1. Permit Application dated January 1, 2021
2. WCA Notice of Decision dated June 30, 2021
3. Permit Application Narrative dated January 21, 2021, prepared by Bolton & Menk, Inc.
4. District Comment Response Memorandums dated March 1, 2021, April 27, 2021, and June 8, 2021, prepared by Bolton & Menk, Inc.
5. Plans dated January 19, 2021, February 25, 2021 and April 26, 2021, prepared by Bolton & Menk, Inc.
6. Email correspondence dated February 16, 2021 indicating seven items required to be submitted for the application to be considered complete. Email correspondence dated April 12, 2021 indicating six items required to be submitted for the application to be considered complete. Email correspondence dated June 25, 2021 indicating items required for the application to be considered complete.
7. Email correspondence dated August 23, 2021 from the City of Eden Prairie acknowledging the project review, comments and recommendations are based on the District's revised rules dated July 22, 2021.

The application with the submitted information is complete.

2.0 Floodplain Management and Drainage Alterations

The District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project because land-altering activities are proposed below the 100-year frequency flood elevation of four wetlands within the project area.

The District's XPSWMM model identifies elevation 888.0 M.S.L. as the Atlas 14 100-year high water elevation for all four of the water basins/wetlands within the project area.

The requirements of the floodplain rule state land-altering activities proposed below the 100-year frequency flood elevation of the wetlands must not result in net fill within the floodplain. A summary of the proposed work below the 100-year high water level (HWL) of the four wetlands is provided in Table 2, with the individual wetlands identified as their respective subwatershed:

Table 2: Proposed work below the 100-year HWLs of the wetlands in the project area

Wetland	Pre-project 100-year HWL (M.S.L.)	Post-project 100-year HWL (M.S.L.)	Proposed Work Below 100-year HWLs
BL-28B2	888.0	888.0	Removal of 15-inch CMP culvert, installation of dual 24-inch RCP culverts, grading, and installation of riprap and geotextile fabric at proposed culvert ends.
BL-28A1	888.0	888.0	Removal of 15-inch RCP culvert, installation of dual 24-inch RCP culverts, grading, and installation of riprap and geotextile fabric at proposed culvert ends. The proposed work includes disturbances in wetlands BL-28A1, BL-28A2 and BL-30B.
BL-28A2	888.0	888.0	
BL-30B	888.0	888.0	

Rule 2 criteria for floodplain and drainage alterations includes the following:

2.3.1: The low floor elevation of all new and reconstructed structures must be constructed in accordance with the NMCWD Stormwater Rule, subsection 4.3.3

No new or reconstructed structures, having a low-floor elevation, are proposed within the project limits.

2.3.2: Placement of fill below the 100-year flood elevation is prohibited unless fully compensatory flood storage is provided within the floodplain and:

a. *at the same elevation +/- 1 foot for fill in the floodplain and:*
b. *at or below the same elevation for fill in the floodplain of a water basin or constructed stormwater facility.*

Wetland BL-28A2 is an approximately 213-square foot enclosed “pocket” wetland located upstream of the Old Shady Oak Road culvert. Fill of approximately 114 cubic yards is proposed below the 100-year high water elevation of the four wetlands, including the filling in of wetland BL-28A2.

Removal and replacement of the culverts, placement of riprap at the culvert ends, and to match the adjacent Old Shady Oak Road elevation will result in approximately 131 cubic yards of material removed at or below the same elevation as the fill in the floodplains of the wetland complex resulting in a net increase of 17.0 cubic yards of floodplain volume within the four wetlands and conformance to subsection 2.3.2 criteria.

2.3.3. The District will issue a permit to alter surface flows only if it finds that the alteration is not reasonably likely to have a significant adverse impact on any upstream or downstream landowner and is not reasonably likely to have a significant adverse effect on flood risk, basin or channel stability, groundwater hydrology, stream base-flow, water quality or aquatic or riparian habitat.

As previously stated, the most recently updated District's XPSWMM model was used to evaluate pre-project and post-project flows, flood stage, inundation extents, outlet characteristics, and drainage patterns within the four subwatershed areas including downstream features. The following three discussion subsections provide an analysis of the flood risk, basin and channel stability, groundwater hydrology, stream base-flow, water quality and aquatic/riparian habitat items evaluated as part of the project.

Flood Risk Discussion

The project proposes replacement of three existing culverts beneath Chamberlain Court and beneath and adjacent to Old Shady Oak Road to increase hydraulic conveyance through the wetland complex in the project area (BL-28B2, BL-28A1, BL-28A2 and BL-30B).

The project's most downstream subwatershed is subwatershed BL-30B, located north of the MAC Philanthropies property and east of Old Shady Oak Road. The outlet for BL-30B is ultimately controlled by an 18-inch RCP under Old Shady Oak Road that discharges to a steep ravine on Three Rivers Park District (TRPD) property and ultimately to Bryant Lake.

The XPSWMM model was used to simulate several Atlas 14 design rainfall events (2-, 10-, and 100-year, 24-hour events) for pre-project and post-project conditions to evaluate flood risk at the waterbodies within the project area and downstream properties. A summary of the high water levels (HWLs) at the four subwatersheds within the project area and at downstream properties is summarized in Table 3:

Table 3: Pre-project and post-project HWLs within the project area and at downstream features

Subwatershed/Storage Area	2-Year HWL (M.S.L.)		10-Year HWL (M.S.L.)		100-Year HWL (M.S.L.)	
	Ex	Prop	Ex	Prop	Ex	Prop
BL-28B2 (project area)	886.8	885.2	887.0	886.1	888.0	888.0
BL-28A1 (project area)	884.6	883.7	886.4	885.2	888.0	888.0
BL-28A2 (project area)	883.4	883.2	884.5	885.1	888.0	888.0
BL-30B (project area)	882.2	882.8	884.0	885.0	888.0	888.0
BL-42 (downstream – TRPD property)	862.3	862.4	862.8	862.8	863.8	863.8
Bryant Lake (downstream)	851.8	851.8	852.6	852.6	854.5	854.5

During large rainfall events, the outlet from BL-30B (controlled by an 18-inch pipe) restricts the outflow downstream and results in all storage areas becoming hydraulically connected. When hydraulically connected, the detention drawdown is controlled by the outlet from BL-30B (i.e. the 18-inch controlling pipe). The extent of the drawdown time results in portions of Chamberlain Court and Old Shady Oak Road to remain inundated for extended periods of time. The proposed drainage improvements do not include modifications to the BL-30B outlet pipe.

The overflow control elevations along Chamberlain Court and Old Shady Oak Road are approximately 886.7 M.S.L. and 887.3 M.S.L., respectively. Table 3 shows that increasing the discharge capacity from BL-28B2 and BL-28A2 lowers the HWL in BL-28B2 and BL-28A1 for the higher frequency storm events and reduces inundation and flood risk along Chamberlain Court for the 2- and 10-year design events. Increasing discharge capacity increases the HWL in BL-30B by 0.6 and 1.0 feet for the 2- and 10-year design events, respectively. However, the increase in HWL in BL-30B for the higher frequency storm events does not result in an increase in the roadway flooding along Old Shady Oak Rd. During the 100-year, 24-hour design event, flood risk is not increased, as the 100-year HWL is maintained to pre-project conditions at elevation 888.0 M.S.L. within the four subwatersheds of the project.

The District's updated XPSWMM model was used to evaluate impacts to downstream features, including Bryant Lake and a wetland on TRPD property - upstream of Bryant Lake. Table 3 shows the proposed activities do not increase the 100-year HWL or flood risk to downstream properties and/or facilities and are within the degree of modeling accuracy.

Because flood risk within the four subwatersheds will be maintained or reduced in addition to the downstream area, the project is not reasonably likely to have a significant adverse effect on flood risk in conformance with subsection 2.3.3 criteria.

Basin and Channel Stability, Groundwater Hydrology, Base-flow, and Water Quality Discussion

In order to demonstrate the project is not reasonably likely to have significant adverse impacts within the project area and downstream properties, a comparison of the existing and proposed discharge rates and velocities for the 2-, 10-, and 100-year design rainfall events has been provided and summarized in Tables 4 and 5 below.

Table 4: Existing and Proposed Peak Discharge Rate Analysis

Subwatershed	2-Year (c.f.s.)		10-Year (c.f.s.)		100-Year (c.f.s.)	
	Ex	Prop	Ex	Prop	Ex	Prop
From BL-28B2 (project area)	7.8	22.3	7.7	39.7	7.6	52.7
From BL-28A1 (project area)	7.7	22.8	10.4	32.5	11.8	40.1
From BL-28A2 (project area)	8.0	23.0	11.1	32.8	16.0	41.7
From BL-30B (project area)	11.9	12.8	14.0	14.8	17.1	17.1
To Bryant Lake from BL-42 (downstream of project area)	11.9	12.8	30.5	31.1	78.6	78.8

Table 5: Existing and Proposed Peak Velocity Analysis

Subwatershed	2-Year (ft/s)		10-Year (ft/s)		100-Year (ft/s)	
	Ex	Prop	Ex	Prop	Ex	Prop
From BL-28B2 (project area)	6.3	5.8	6.2	6.3	6.2	8.3
From BL-28A1 (project area)	6.2	3.7	8.3	5.1	9.4	6.3

From BL-28A2 (project area)	3.5	3.9	3.9	5.1	5.0	6.6
From BL-30B (project area)	3.8	4.4	4.4	4.7	5.3	5.3
To TRPD Ravine (downstream of project area)	7.2	7.7	8.4	8.8	10.1	9.6
To Bryant Lake from BL-42 (downstream of project)	11.9	11.6	14.8	14.9	17.9	17.9

As previously stated, the project will replace the existing 15-inch culvert beneath Chamberlain Court with dual 24-inch culverts to increase the outflow hydraulic capacity thereby reducing flooding. Additionally, the existing 15- and 24-inch culverts beneath and adjacent to Old Shady Oak Road are proposed to be replaced with dual 24-inch culverts to also increase the hydraulic conveyance through the wetland complexes and reduce flooding.

Existing upstream and downstream invert elevations are to be maintained for the Chamberlain Court culverts. Because of a conflict with an existing sanitary sewer pipe, existing invert elevations could not be maintained at the proposed dual 24-inch culverts beneath Old Shady Oak Road. A steel plate weir is proposed to be installed on the upstream end of Old Shady Oak Road culvert replacement to maintain the normal water level (NWL) of BL-28A1. The top of the steel plate weir will match the existing culvert invert elevation, maintaining the existing flowline at this location. Since the replacement culvert invert and weir elevations will match pre-project elevations, alterations to the NWL of the wetlands in the project area are not proposed, resulting in changes that are not likely to significantly adversely impact groundwater conditions within the area and conforming to subsection 2.3.3 criteria.

To adequately address the requirements of subsection 2.3.3, documentation was required to demonstrate that the increases in the post-project flow rates will not reasonably have an adverse effect on water quality, change the existing flowline/gradient, or cause increased scour, erosion or sedimentation. As shown in Table 4 above, modeling results indicate that an increased conveyance to BL-30B in post-project conditions results in increased conveyance through the upstream hydraulically connected features, including discharge to and from BL-28A1. Peak flow rates discharging to BL-28A1 are increased from pre-project conditions by 14.5 c.f.s., 32.0 c.f.s. and 45.1 c.f.s. for the 2-year, 10-year and 100-year storm events, respectively. Peak flow rates discharging from BL-28A1 are increased from pre-project conditions by 15.1 c.f.s., 22.2 c.f.s., and 28.3 c.f.s. for the 2-year, 10-year and 100-year storm events, respectively. Discharge from the remaining subwatersheds do not represent a significant increase when compared to pre-project conditions.

The applicant evaluated flow rates and velocities noted above along with the channel/basin geometry to determine potential basin/channel stability and stream base flow impacts. Existing wetland data compiled as part of the District's recent wetland inventory project indicates evidence of a ditch or channel in BL-28A1 resulting from historical ditching activities within the wetland. Inflow hydrographs at BL- 28A1 were submitted with a direct comparison between pre-project and post-project flow rates and velocities. Although peak discharge rates increase considerably to and from BL-28A1 as noted above, resultant peak velocity increases are not significant. The most significant peak velocity increase from pre-project conditions identified is 2.1 feet per second during the 100-year storm event from B-28B2 (discharging to BL-28A1). Velocities are a significant driving force when considering

channel and basin erosion potential. The Memorandum dated April 27, 2021, prepared by Bolton & Menk, Inc. indicates that post-project conditions do not exhibit erosive velocities in accordance MPCA guidance. Additionally, the project proposes placement of riprap both upstream and downstream of the replacement culverts to further dissipate energy.

An open channel flow analysis was completed to determine post-project channel performance in comparison to pre-project conditions. The applicant has indicated based on the analysis, the 2- and 10-year design storms have associated peak flow rates of 22.3 c.f.s. and 39.7 c.f.s., respectively. Based on the existing channel slope (0.05%) through wetland BL-28A1, the channel geometry required to convey the proposed 2-year design storm event runoff within the banks of the wetland consists of a 1-foot deep channel with an 18-inch channel bottom and 10:1 side slopes. Material submitted indicates the existing channel through BL-28A1 does not have the capacity to contain the runoff generated by the 2-, 10- or 100-year design storm events, resulting in channel overbank flow conditions for all events. Overbank flow results in sheet flow conditions through fully vegetated and stabilized surfaces within the wetland that further reduces flow velocities and minimizes the potential for erosion, scour and sedimentation through the wetlands. In addition, the proposed grading, riprap and vegetation reestablishment both upstream and downstream of the replacement culverts will manage flows, reduce velocities, and reduce erosion within the channel at BL-28A1.

In order demonstrate the project is not reasonably likely to have an adverse impact on any downstream properties, the applicant provided a comparison of pre-project and post-project peak velocities for the 2-, 10-, and 100-year design rainfall events at the project area outfall to the steep ravine on TRPD property. A site assessment was completed to,

1. identify any evidence of existing slope degradation or scour,
2. evaluate the slope at the outfall,
3. survey existing vegetation that is currently supporting and maintaining the integrity of the ravine, and
4. determine if a stabilization plan should be implemented.

Photos submitted from the applicant's site assessment shows the outfall is adequately armored with grouted riprap with no evident signs of instability or erosion. The grouted riprap covers the area directly downstream of the outlet to the ravine. A forebay to further assist with energy dissipation at the outfall was also observed.

Table 5 shows that post-project peak velocities observed at the outfall are not increased or decreased by more than 0.5 feet per second compared to pre-project conditions for the 2-, 10- and 100-year design storm events. The proposed peak velocity for the 100-year design storm event indicates a 0.5 feet per second decrease at the outfall, likely as a result of the change in timing in the peak flows through the system, as evidenced by the submitted hydrographs for the project area. Because of the shifting in the peak timing of the local subwatershed flows, the post-project peak velocities at the ravine outfall are similar to pre-project flows. Additionally, documentation was submitted identifying applied shear stresses between existing and proposed conditions at the outfall based on the Federal Highway Administration publication, *Culvert Design for Aquatic Organism Passage*

The information submitted indicates that the slight increase (0.5 feet per second) in the peak velocities at the ravine and post-project shear stresses anticipated are not reasonably likely to have a significant adverse impact on the water quality, channel stability, or base-flow conditions. The ravine is currently adequately protected with riprap and vegetation and the slight increases observed are within the engineering modeling degree of accuracy. The project conforms to subsection 2.3.3 criteria.

The project does not propose to,

1) increase impervious area within the project area,
2) modify or alter subwatershed drainage areas,
3) modify the controlling outlet of the wetland complexes. The existing culvert invert elevations will be maintained (through the use of a steel plate weir and/or matching existing culvert invert elevations, and
4) not reasonably likely to have a significant adverse effect on the basin or channel stability, groundwater hydrology, stream base-flow, or water quality within the project area or at upstream/downstream properties based on the peak discharge rate and velocity analysis completed, conforming to subsection 2.3.3 criteria.

Aquatic/Riparian Habitat Discussion

To adequately address the requirements of subsection 2.3.3, documentation was submitted to demonstrate that the post-project increased flow rates and water surface elevation changes (increase or decrease) for the 2-, 10- and 100-year design storm events are not reasonably likely to have a significant adverse impact on aquatic or riparian habitat.

To address the potential displacement of aquatic and riparian habitat, the applicant was required to provide documentation demonstrating that observed post-project water level fluctuations would not result in wetland impacts, including displacement or degradation of the aquatic and riparian habitat at the wetlands.

Table 3 shows that the project activities will result in a decrease in the HWL at wetlands BL-28B2 and BL-28A1 during the higher frequency storm events. Modeling results indicate an increase in the HWL during higher frequency storm events at BL-30B. Submitted information indicates that it can be expected that waterfowl species may use the wetlands for general habitat use (feeding and roosting) and as potential nesting areas. Fluctuations in water levels (increase and decrease) have the potential to negatively impact waterfowl, specifically during nesting periods. However, these types of negative impacts associated with fluctuating water levels often require extreme climactic conditions such as prolonged drought or flooding conditions to be detrimental. These extreme climactic conditions will result in changes to the aquatic habitat, specifically changes to the existing vegetation community. The project narrative indicates that post-project HWLs compared to pre-project conditions for the 2- and 10-year are both minor (less than two feet) and short-lived (1.5-3 days) at all wetlands. The narrative indicates that currently, the habitat is stable, and the increases/decreases in the post-project HWLs for the higher frequency storm events are not reasonably likely to have significant adverse impacts. Furthermore, submitted information indicates that deviations in HWLs over short periods of time will not impact the flora and fauna. Existing vegetation is dominated by cattail and reed canary grass at east

wetland – species that are common in disturbed wetlands or wetlands that receive a significant amount of stormwater runoff.

The project is not reasonably likely to significantly adversely impact conditions in a manner that will deter wildlife (such as waterfowl, amphibians, reptiles) from using the area adjacent to the wetlands and/or at the project area outlet discharge point at the ravine, if currently used. Construction activities may temporarily displace wildlife until the area is restored to pre-project conditions, thus the project conforms to Rule 2.3.3 criteria.

2.3.4 No structure may be placed, constructed or reconstructed and no surface may be paved within 50 feet of the centerline of any water course, except that this provision does not apply to:

a. Bridges, culverts, and other structures and associated impervious surface regulated under Rule 6.0;

b. Trails 10 feet wide or less, designed primarily for nonmotorized use.

No structure is proposed to be placed, constructed, or reconstructed as part of the project and no water course is located within the project area.

The proposed project conforms to the floodplain management and drainage alteration requirements of Rule 2.0.

3.0 Wetlands Management

As previously stated, the District's Wetland Management Rule 3.0 applies to the project because land-disturbing activities are proposed within and/or upgradient from the four wetlands within the project area, and the project requires a permit under District Rules 4.0 and 6.0 (Rule 3.4). The District is the LGU responsible for administering the WCA in Eden Prairie.

Bolton & Menk Inc. has submitted a Joint Application Form for Activities Affecting Water Resources in Minnesota received on February 9, 2021 requesting updated wetland boundary/type approval, a WCA utility exemption and a WCA no-loss determination for work in the four wetlands. Wetland boundaries for the four wetlands were previously delineated by Kjolhaug Environmental Services Company, Inc. and approved by the District on December 16, 2015. The 2015 wetland delineation expired December 16, 2020. A site review was completed by the technical evaluation panel (TEP) in 2020 and verified that site conditions have not been modified, therefore re-approval of the delineation is applicable.

Direct wetland impacts associated with the project have been avoided and minimized to the greatest extent practicable, and are less than the 0.5-acre threshold to meet the requirements of the utility exemption under MN Rule 8420.0410. The fill material proposed to be removed within the BL-28A2 wetland complies with the WCA no-loss criteria under MN Rule 8420.0415B.

A Notice of Decision dated June 30, 2021 has been issued approving the wetlands' boundary and type determination, a no-loss determination and a utility exemption. Subsection 3.2.2a of the District's Rules indicates that the requirements of Rule 3.4 Wetland Buffers and Rule 3.5 Stormwater Treatment are exempt to wetlands that are disturbed by utility improvements or repairs that are the subject of a no-loss or utilities-exemption determination from the LGU.

As identified in Floodplain Management and Drainage Alterations Section 2.0 of this report, the District's recent wetland inventory project indicates evidence of a ditch or channel in BL-28A1 resulting from historical ditching activities within the wetland. Additionally, fill material has historically been placed within the wetland along the west side of Old Shady Oak Road as a result of activities by an adjacent property owner. To prevent future degradation of the wetlands and for the purpose of providing stabilized vegetation for over-bank flow conditions, buffer area is shown on the plans at the culvert end sections on property under the ownership of the City.

Following wetland disturbances, all wetland characteristics will be restored to pre-project conditions within 90 days of the commencement of construction. The project conforms to the requirements of Rule 3.0.

4.0 Stormwater Management

The District's requirements for stormwater management apply to the project because more than 50 cubic yards of material will be disturbed, Rule 4.2.1a. The project is considered a linear project (Rule 4.2.4). For linear projects creating less than one (1) acre of new or additional impervious area (0 acres of net new impervious area is proposed to be created), the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply.

5.0 Erosion and Sediment Control

The District's requirements for erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 5.2.1a and b, respectively.

Silt fence, storm drain inlet protection, and rock and bioroll ditch checks will be provided for erosion prevention and sediment control. Native seed mixtures and erosion control blanket will be installed for final stabilization measures.

The project contact is Patrick Sejkora, City of Eden Prairie. The contractor for the project will need to designate a contact who will remain liable to the District for performance under the District's Erosion and Sediment Control Rule 5.0 from the time the permitted activities commence until vegetative cover is established, in accordance with subsection 5.4.1e.

6.0 Waterbody Crossings and Structures

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project because stormwater infrastructure improvements are proposed within the bed or bank of the wetlands/water basins (defined as an enclosed natural depression with definable banks capable of retaining water) in the project area, Rule 6.2. Thus, conformance with Rule 6.3.1 is required. Proposed work within the bed or bank of the wetlands is identified in Table 2 of this report.

Rule 6.3.1 states construction, improvement, repair or removal of a waterbody crossing in contact with the bed or bank of a waterbody:

a) *Shall retain adequate hydraulic capacity and assure no net increase in the flood stage of the pertinent waterbody:*

   Section 2.3.3 of this report includes a discussion of criteria required and submitted in conformance with Rule 6.3.1a.

b) *Shall retain adequate navigational capacity pursuant to any requirements of the waterbody's classification by the District:*

The wetlands in the project area are not used for navigational purposes.

c) *Shall not adversely affect water quality, change the existing flowline/gradient, or cause increased scour, erosion or sedimentation:*

Section 2.3.3 of this report includes a discussion of criteria required and submitted in conformance with Rule 6.3.1c.

d) *Shall preserve existing wildlife passage along each bank and riparian area:*

Subsection 2.3.3 of this report includes a discussion of criteria required and submitted in conformance with Rule 6.3.1d.

e) *Shall represent the "minimal impact" solution to a specific need with respect to all other reasonable alternatives:*

Several project options were investigated and input was received from various stakeholders. Alternatives evaluated include 1) no-build alternative, and 2) altering the design of the culverts to increase conveyance, including alteration of the BL-30B outlet.

While the no-build alternative minimizes impacts to wetlands and maintains the existing conveyance through the wetland complex, a no-build approach would not solve the street flooding problem or address private property concerns brought to the City. The second alternative evaluated included increasing conveyance through the wetland complexes and modifying the BL-30B outlet. This alternative resulted in significant impacts to downstream property owners. Alternative designs evaluated had the potential to alter normal water elevations and adversely impact downstream landowners, as the proposed inverts would likely not match existing conditions.

The proposed design was chosen based on constructability, avoidance of utility conflicts, and the reduction in impacts to the project area wetlands and downstream properties.

Rule 6.3.2 states, projects involving directional boring or horizontal drilling must provide for minimum clearance of 3 feet below the bed of a waterbody and a minimum setback of 50 feet from any stream bank for pilot, entrance and exit holes.

No directional boring or horizontal drilling below a waterbody is proposed, and no directional boring or horizontal drilling underneath or near a stream bank is proposed.

Rule 6.3.3 states, removal of structures or other waterway obstructions:

a) *Shall maintain the original cross-section and bed conditions to the greatest extent practicable:*

Areas within the bank of the wetlands impacted by replacement of the Chamberlain Ct culvert will be restored to pre-project natural conditions, including elevations, contours, and substrate. Disturbed areas will be graded such that no net reduction in floodplain storage volume will occur, as discussed in Section 2 of this report.

Areas within the banks of the wetlands impacted by replacement of the Old Shady Oak Road culvert will be graded to remove fill upstream of the culvert. The fill material

proposed for removal within subwatershed BL-28A2 wetland meets the WCA no-loss criteria under MN Rule 8420.0415B, as discussed in Section 3 of this report. The project conforms to the requirements of Rule 6.3.3a. Work downstream of the proposed Old Shady Oak Road replacement culvert will be restored to pre-project natural conditions, including elevations, contours and substrate.

b) Shall achieve complete removal of the structure, including any footings or pilings that impede navigation:

No removal of structures or other water obstructions is proposed.

c) Shall not involve the removal of a water level control device:

No removal of structures or other water obstructions is proposed.

Rule 6.3.4 requires *that the plans must state no activity affecting the bed of a protected water may be conducted between April 1 and June 30 on public waterbodies to minimize the impacts on fish spawning and migration:*

Wetlands located in the project area are not public waters, as defined by Minnesota Statue 103G.005 Subdivision 15 and 15a.

11.0 Fees

Because the property owner is a public entity, no fees are charged.

Rules 2.0-6.0 ..... $0

12.0 Financial Assurances

Because the property owner is a public entity, the District's financial assurance requirements do not apply.

Sureties for the project are: $0

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. Rule 2 is met. Compliance with Rules 3, 5 and 6 will be determined based on review of the items to be submitted following the provisions outlined below.
3. As indicated in the District Comment Response Memorandum dated March 1, 2021, prepared by Bolton & Menk, Inc., the City is in discussions with the Three Rivers Park District and other impacted private property owners to inform these entities of the slight increase in the peak velocity at the ravine outfall on Three Rivers Park District Property.
4. Increasing discharge capacity from BL-28B2 and BL-28A2 will lower the maximum water surface elevation in BL-28B2 and BL-28A1 for the higher frequency storm events. This reduces the inundation and flood risk along Chamberlain Court for the 2- and 10-year design events, per the project objective. Increasing the discharge capacity also increases the maximum water surface elevation in BL-30B, the large wetland complex immediately north of the Margret A. Cargill (MAC) Philanthropies property and east of Old Shady Oak Road, by 0.6 and 1.0 feet for the 2- and 10-year design events, respectively. Based on the

submitted materials and summarized in Section 2.0 of this report, the project is not reasonably likely to have a significant adverse impact on the flood risk, basin/channel stability, groundwater hydrology, stream base-flow, water quality or aquatic/riparian habitat at the wetland north of the MAC site. The 100-year high water elevation within BL-30B will be maintained to pre-project conditions, in conformance with Rule 2.0 criteria. The City of Eden Prairie has indicated they are in correspondence with the MAC Philanthropies property and permissions will be obtained from the private landowner for the project.

Recommendation

Approval, contingent upon:

General Provisions

Per Rules 3.4.7 and 6.5, a written agreement is to be provided to the District stating the City's responsibility for the maintenance of the wetland buffers and stormwater infrastructure.

The applicant providing a name and contact information from the contractor responsible for the erosion and sediment control at the site. NMCWD must be notified if the responsible individual changes during the permit term.

Submittal of the property owners' approval for the slight increase in peak flow velocities at the ravine outfall on Three Rivers Park District Property, and the increase in the 2- and 10-year high water elevation of BL-30B, the large wetland complex immediately north of the Margret A. Cargill (MAC) Philanthropies property.

By accepting the permit, when issued, the applicant agrees to the following stipulations for the closeout of the permit:

An as-built drawing conforming to Rule 2.3 criteria for the 100-year flood elevations of wetlands in the project area, showing that no net reduction in floodplain storage volume results from the project.

In accordance with Rule 3.4.5, buffer markers at the limits of the wetland buffers in the project area.

REMOVAL NOTES:

- CONTRACTOR IS RESPONSIBLE TO LOCATE AND VERIFY ALL EXISTING PRIVATE AND PUBLIC UTILITIES PRIOR TO BEGINNING WORK
- TREES SHALL BE MARKED AND VERIFIED BY OWNER BEFORE REMOVAL

CHAMBERLAIN CT

OLD SHADY OAK ROAD

CHEROKEE TRAIL W

REMOVE 15" FLARED END

REMOVE 45 LF 15" CMP STORM CULVERT

241 SQ FT BITUMINOUS REMOVAL

48 LF BITUMINOUS SAWCUT

EXISTING EASEMENT LINE (TYP)

REMOVE 60 LF 24" CMP STORM CULVERT

SIGN REMOVAL (TYP.)

PROTECT EXISTING 8" DIP SANITARY SEWER

REMOVE 25 LF 15" RCP STORM CULVERT

ALL TREE REMOVAL TO BE MARKED IN FIELD AND VERIFIED BY OWNER

DELINEATED WETLAND BOUNDARY (TYP)

460 SQ FT BITUMINOUS REMOVAL

45 LF BITUMINOUS SAWCUT

10 LF CONCRETE SAWCUT

80 SQ FT CONCRETE REMOVAL

REMOVE 15" FLARED END

REMOVE AND RELOCATE UTILITY POLE (BY OTHERS)

HOLD UTILITY POLES DURING CONSTRUCTION

SALVAGE FENCE

REMOVE 14 LF 15" RCP STORM CULVERT

EDGE OF WATER - SURVEYED

HORZ. SCALE 0 10 20 FEET

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TIMOTHY J. OLSON
LIC. NO. 49129 DATE 04/26/2021

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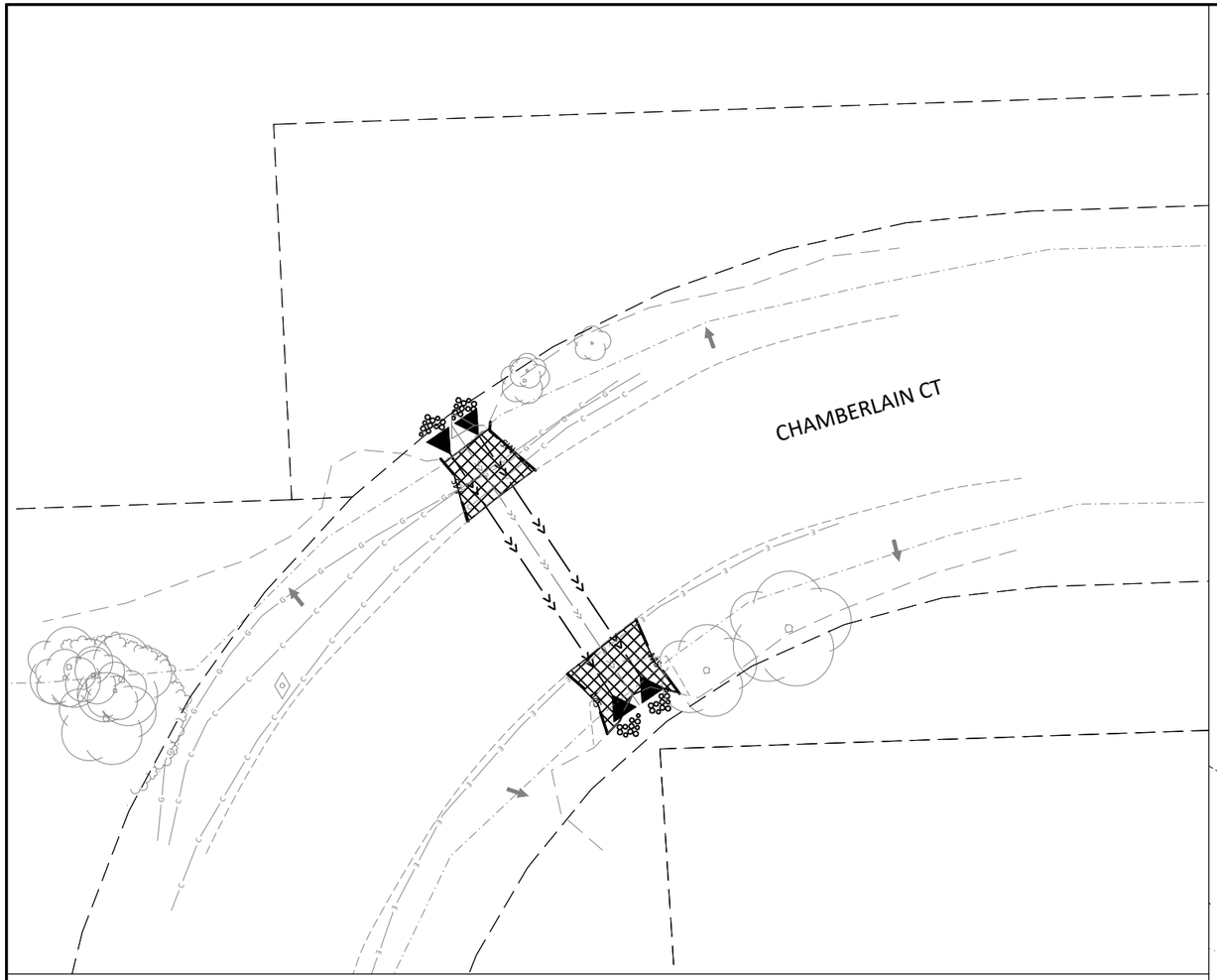
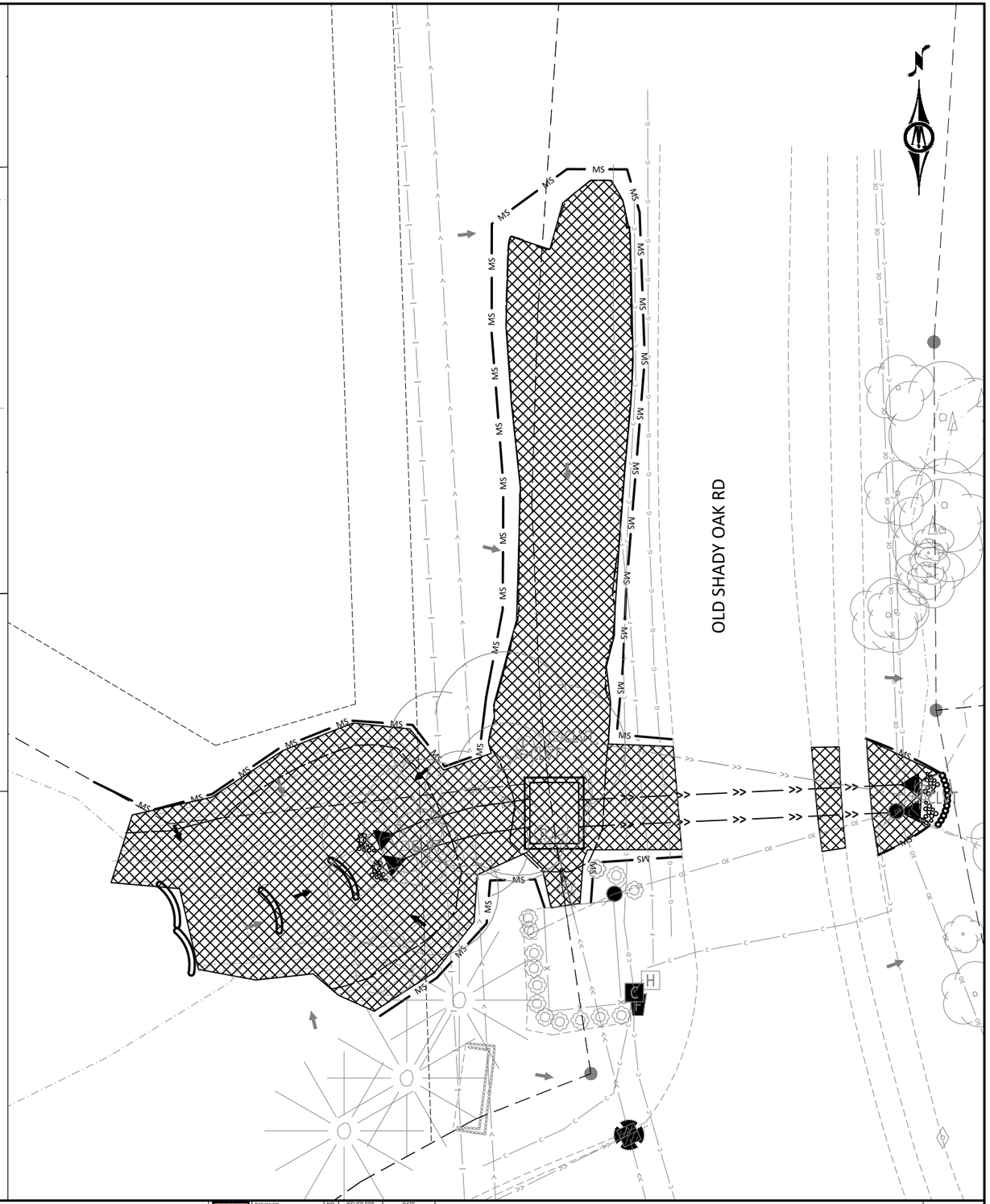
EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
REMOVAL PLAN

SHEET C0.01





EROSION CONTROL LEGEND

MS — MACHINE SLICED SILT FENCE	DITCH CHECK - ROCK
CLASS III RIP RAP	EXISTING/PROPOSED DRAINAGE FLOW
INLET PROTECTION	RESTORATION AREA - FERTILIZER TYPE 3, CAT 3N EROSION CONTROL BLANKET. APPLY MNDOT SEED MIX 35-241 WITHIN DISTURBED AREAS OUTSIDE OF WETLAND BUFFER SEEDING AREAS AND MNDOT SEED MIX 36-211 INSIDE WETLAND BUFFER AREAS (SEE SHEET C3.03/C3.04)
DITCH CHECK - BIOLOG	

RESTORATION NOTES: AREAS DISTURBED OUTSIDE OF PROJECT SITE DUE TO CONSTRUCTION ACTIVITIES SHALL BE RESTORED WITH NATIVE SOD.

HORZ. 0 10 20
SCALE FEET

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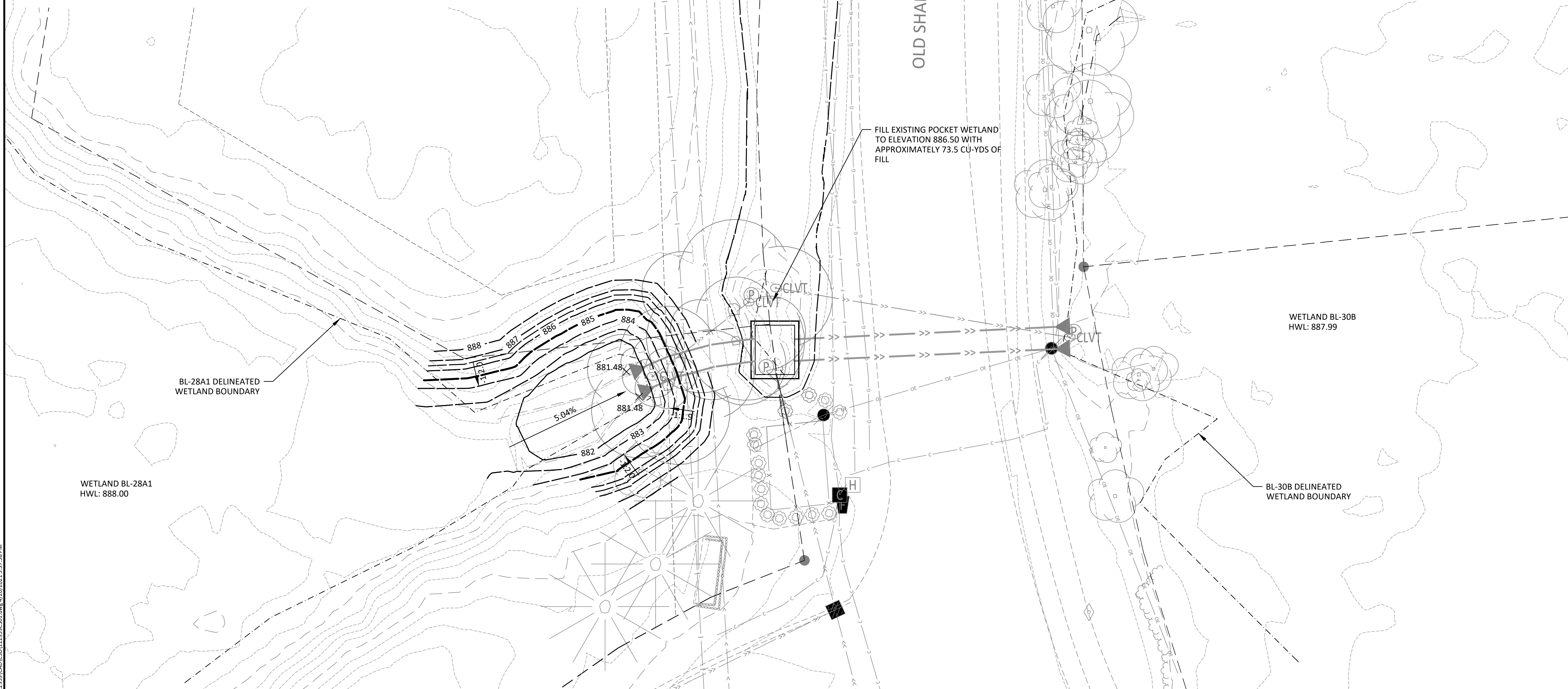
EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
EROSION AND SEDIMENT CONTROL PLAN

SHEET C2.01

GENERAL NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. ALL CUT OR FILL SLOPES SHALL BE 1:3 OR FLATTER UNLESS OTHERWISE NOTED.
3. EXISTING GRADE CONTOURS SHOWN AT 1 FOOT INTERVALS. PROPOSED GRADE CONTOURS SHOWN AT 1 FOOT INTERVALS.
4. IN ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
5. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE
6. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWARE FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS, AT ALL TIMES.
7. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE MINIMUM 6 INCHES OF TOPSOIL.
8. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
9. THE EARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS.
10. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITIES AND NOTIFYING THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION.
11. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING STORM SEWER STRUCTURES, PIPES, AND ALL UTILITIES PRIOR TO CONSTRUCTION.
12. ALL CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 4000 PSI.
13. ELEVATIONS ON PLAN REPRESENT FINISHED GRADE.
14. THE CONTRACTOR SHALL PROTECT ALL TREES ON SITE UNLESS INDICATED TO BE REMOVED.
15. THE CONTRACTOR SHALL PROTECT ALL DRAINAGE WAYS ON SITE AND DISTURB AS LITTLE AS POSSIBLE. IF DISTURBED THE CONTRACTOR SHALL STABILIZE THE DRAINAGE WAY WITHIN 48 HOURS.



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EDEN PRAIRIE, MINNESOTA

OLD SHADY OAK ROAD CULVERT IMPROVEMENTS

GRADING PLAN - OLD SHADY OAK ROAD

SHEET C3.01

GENERAL NOTES:

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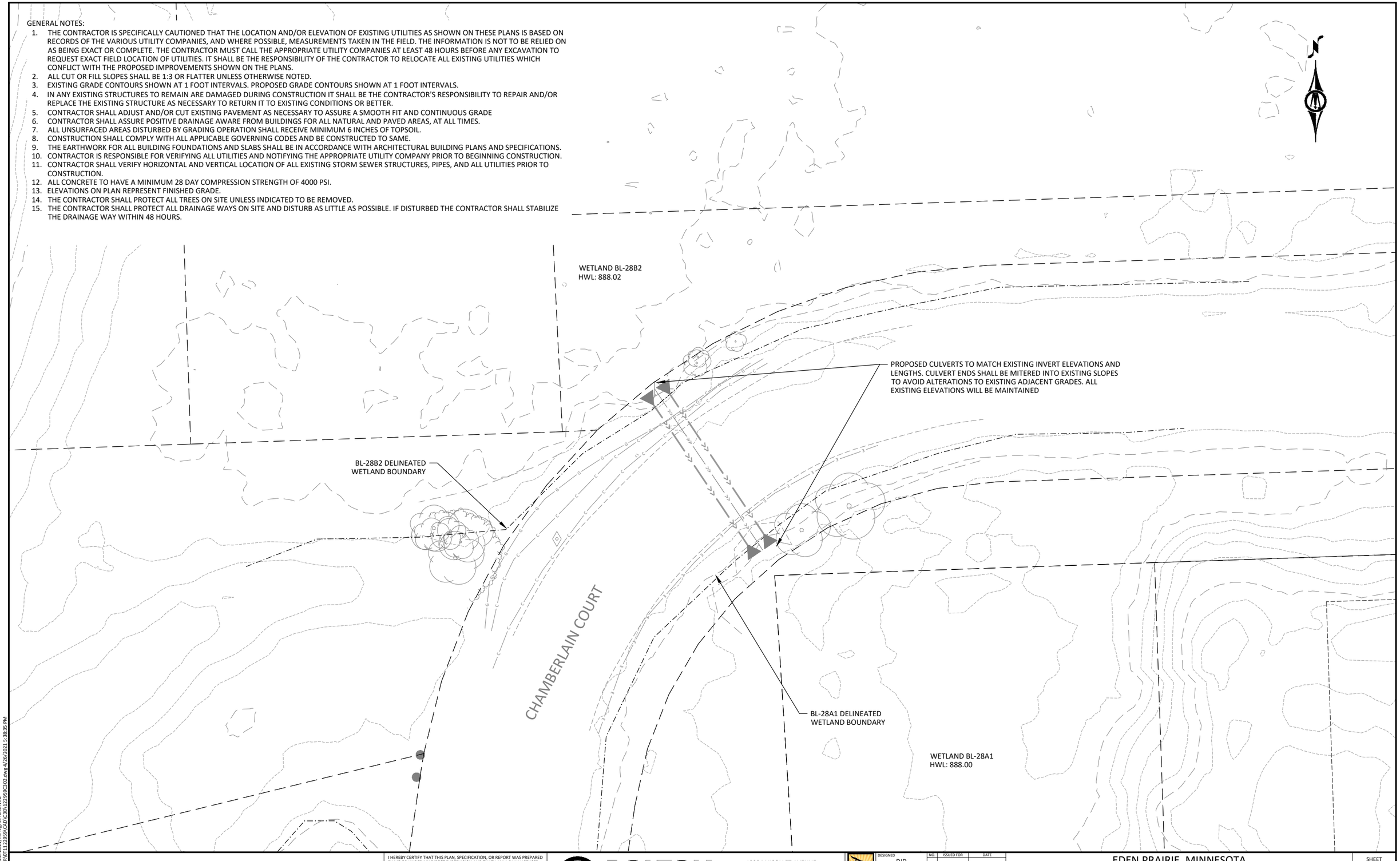

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EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
GRADING PLAN - CHAMBERLAIN COURT

SHEET C3.02

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SCALE FEET

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EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
WETLAND BUFFER EXHIBIT - OLD SHADY OAK ROAD

SHEET C3.03

WETLAND BL-28B2
HWL: 888.02

BL-28B2 DELINEATED
WETLAND BOUNDARY

BL-28A1 DELINEATED
WETLAND BOUNDARY

ROW

WETLAND BL-28A1
HWL: 888.00

LEGEND

- PROPOSED WETLAND BUFFER (MEDIUM VALUE)
- BUFFER SEEDING AREA (MNDOT SEED MIX 36-211 (WOODLAND EDGE CENTRAL)
- BUFFER SIGNAGE

HORZ. SCALE 0 15 30 FEET

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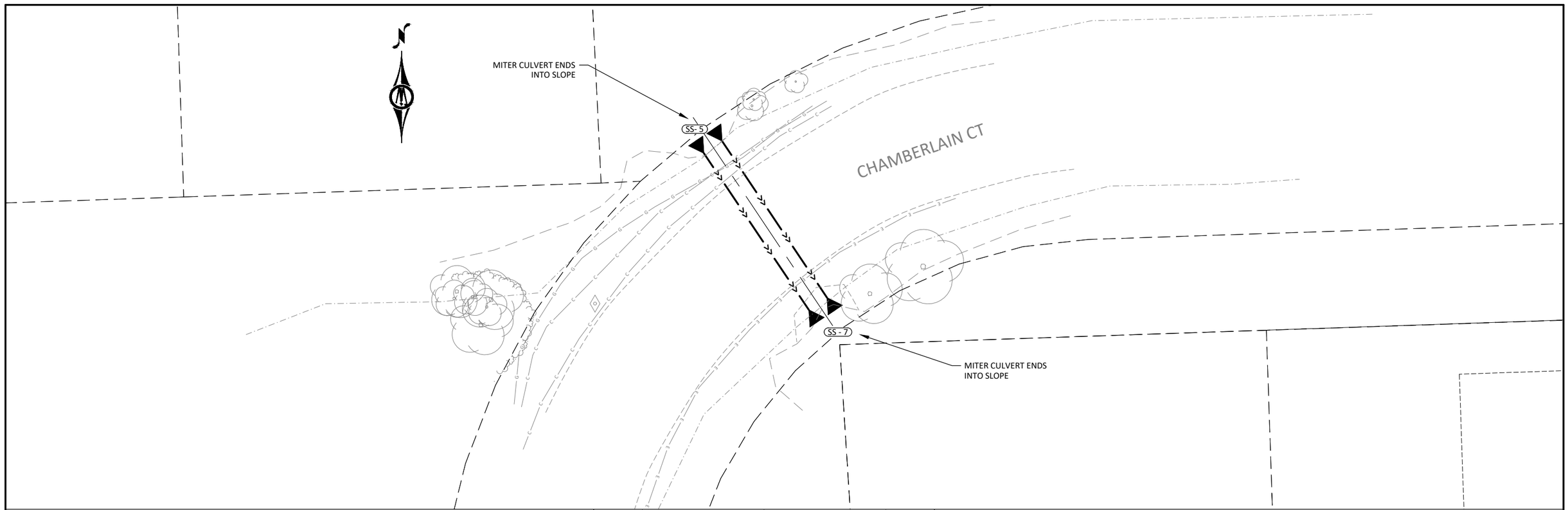
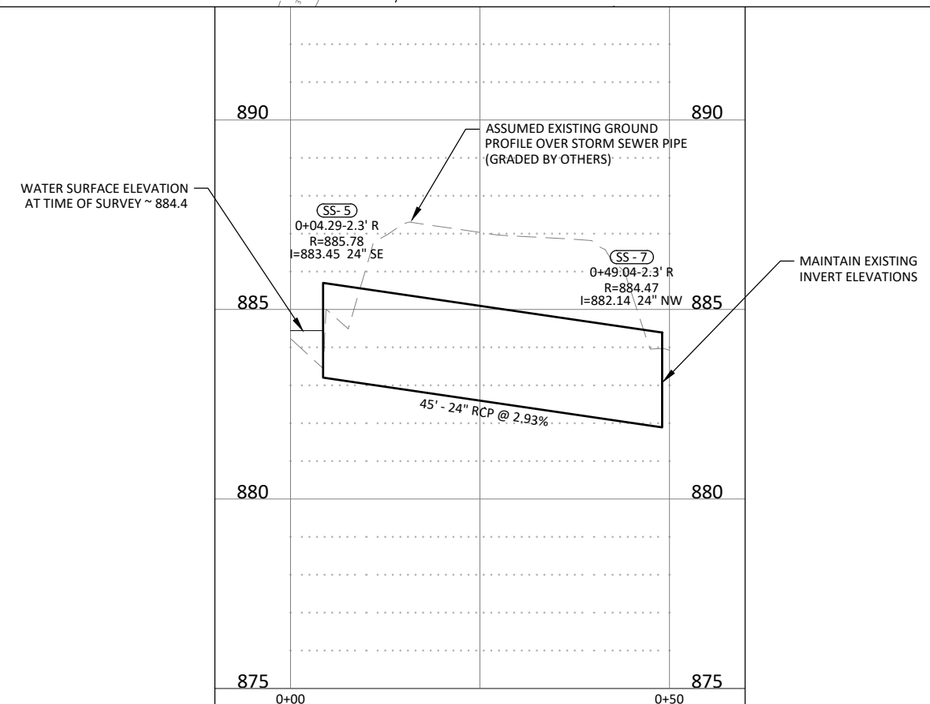
EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
WETLAND BUFFER EXHIBIT - CHAMBERLAIN COURT

SHEET C3.04



NOTES:
1. UNLESS NOTED OTHERWISE, APPROVED STORM SEWER MATERIALS ARE RCP OR CORRUGATED POLYPROPYLENE PIPE (PP) PER SECTION 33 40 00 OF PROJECT SPECIFIC MANUAL.
2. IF RCP IS USED, UNLESS NOTED OTHERWISE:
   12"-18" RCP STORM SEWER SHALL BE CLASS 5
   21"-27" RCP STORM SEWER SHALL BE CLASS 4
   30"-42" RCP STORM SEWER SHALL BE CLASS 3
   48" RCP STORM SEWER SHALL BE CLASS 2
4. STATIONING IN PROFILE REFLECTS PIPE STATIONING
5. FLARED END SECTION AND RIPRAP DETAILS; SEE C8.01 AND C8.02



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VERT. 0 5 10 SCALE FEET

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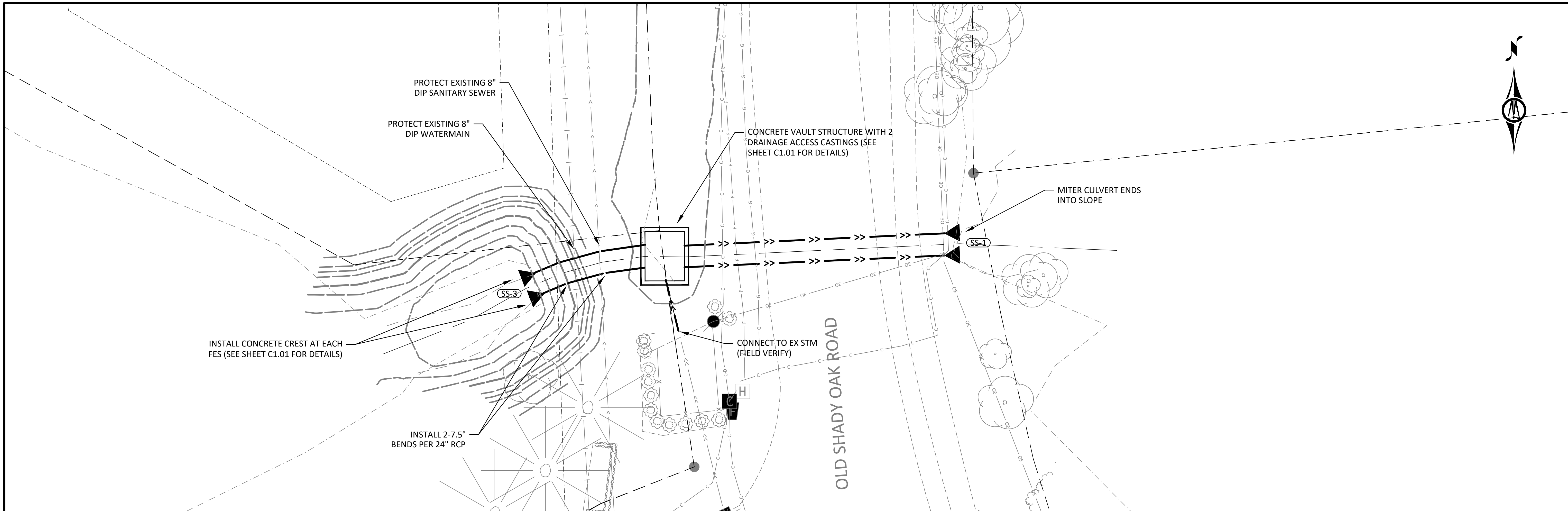
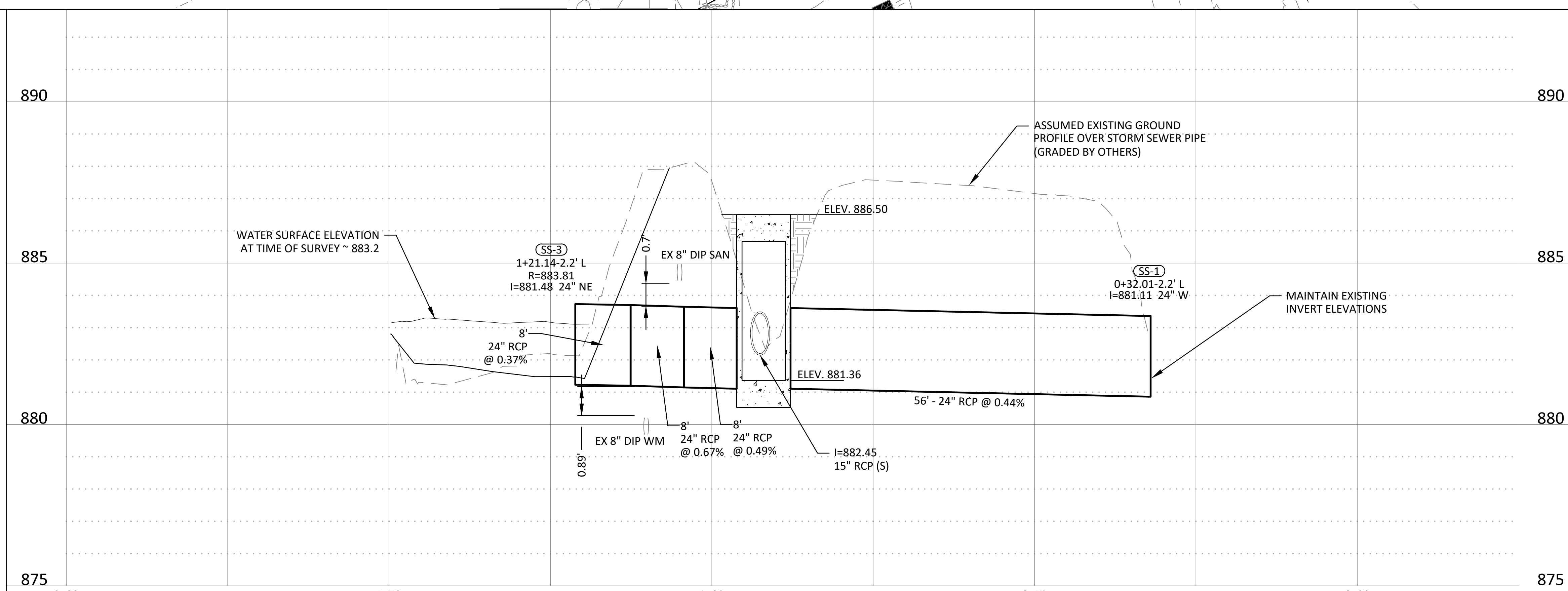
EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
STORM PLAN & PROFLE - CHAMBERLAIN COURT

SHEET C5.01





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EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
STORM PLAN & PROFLE - OLD SHADY OAK ROAD

SHEET C5.02

OLD SHADY OAK RD

CHAMBERLAIN CT

241 SQ FT BITUMINOUS PAVEMENT

OLD SHADY OAK RD

MAINTAIN EXISTING AGGREGATE SHOULDERING

PROTECT EXISTING 8" DIP SANITARY SEWER

PROTECT EXISTING 8" WATERMAIN

460 SQ FT BITUMINOUS PAVEMENT

80 SQ FT CONCRETE SIDEWALK

26 LF DOUBLE YELLOW PAVEMENT MARKINGS

REINSTALL SALVAGED FENCE

CHEROKEE TRAIL W

HORZ. 0 10 20
SCALE FEET

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EDEN PRAIRIE, MINNESOTA
OLD SHADY OAK ROAD CULVERT IMPROVEMENTS
STREET PLAN

SHEET C6.01