

## Riley-Purgatory-Bluff Creek Watershed District Permit Application Review

**Permit No:** 2023-044

**Received complete:** August 11, 2023

**Considered at Board of Manager's Meeting:** September 13, 2023

**Applicant:** City of Chanhassen, Joe Seidl

**Consultant:** HTPO; Adam Pawelk

**Project:** The applicant proposes trail improvements at three sites (#1-Topaz Dr and Lucy Ridge Circle, #2-South Lotus Lake Park, and #3- Galpin boulevard) in Chanhassen, MN.

**Location:** Chanhassen, Minnesota 55317

**Reviewer:** Katherine Tomaska, EIT and Scott Sobiech, PE Barr Engineering

### Potential Board Variance Action

Manager \_\_\_\_\_ moved and Manager \_\_\_\_\_ seconded adoption of the following resolution based on the permit report that follows, the presentation of the matter at the September 13, 2023, meeting of the managers and the managers' findings, as well as the factual findings in the permit report that follows:

Resolved that variance requests Permit 2023-044 are approved, subject to the following conditions: 1. [CONDITION(S)]

### 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 September 13, 2023 meeting of the managers:

Resolved that the application for Permit 2023-044 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 of the variances and permit have been affirmatively resolved, the RPBCWD president or administrator is authorized and directed to sign and deliver to the applicant, Permit 2023-044 on behalf of RPBCWD.

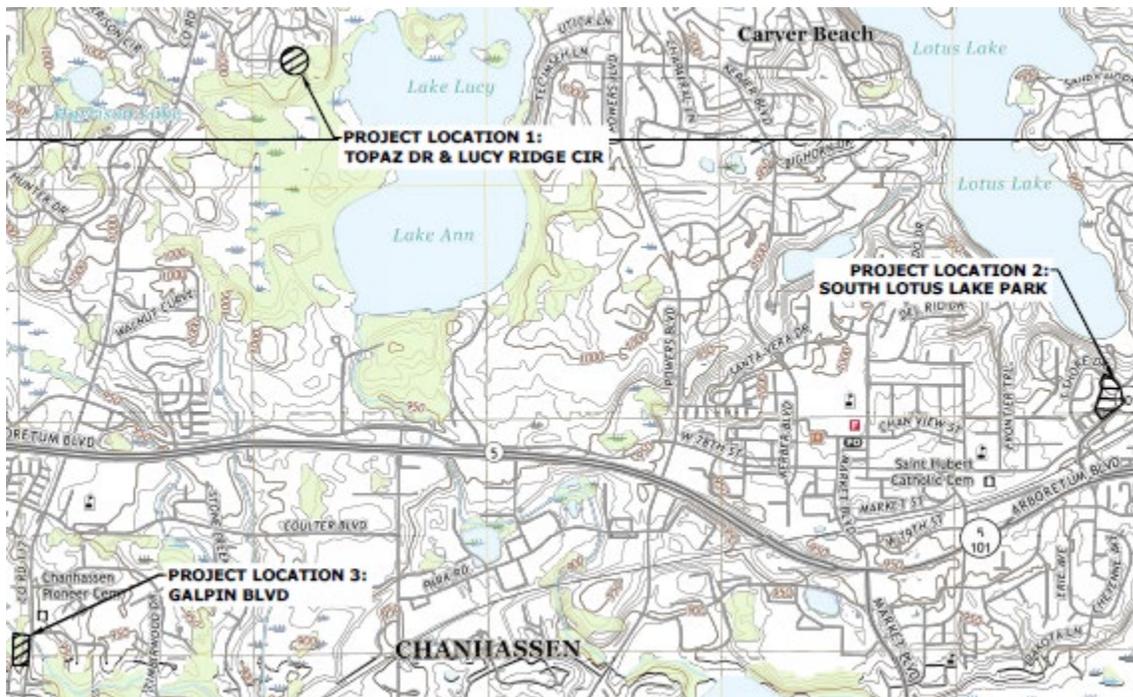
Upon vote, the resolutions were adopted, \_\_\_\_\_ [VOTE TALLY].

**Applicable Rule Conformance Summary**

Rule	Issue	Conforms to RPBCWD Rules?	Comments
B	Floodplain Management and Drainage Alterations	Yes	
C	Erosion Control Plan	See Comment	See rule-specific permit condition C1 related to providing name and contact information for the individual responsible for erosion control.
D	Wetland and Creek Buffers	No	See rule-specific permit condition D1 related to maintenance agreement execution and variance request for minimum buffer width
K	Variations and Exceptions	See Comment	Variance from providing the minimum buffer width.
L	Permit Fees	NA	Governmental Agency
M	Financial Assurances	NA	Governmental Agency

**Project Description**

The applicant has proposed three separate but related projects, involving trail improvements on city-owned property. Because the projects encompass very similar scopes of work, Chanhassen submitted a single application and the work is jointly analyzed in this report, except specific reference is made to a specific site. The three projects/subject locations are site #1-Topaz Drive and Lucy Ridge Circle, #2-South Lotus Lake Park, and #3- Galpin Boulevard (see locations in below figure). No degradation of the applicability or scope of the RPBCWD regulatory requirements applicable to the projects is worked by combining them in this report and permitting matter.



The proposed land-disturbing activities at sites #1 and #2 involve trail improvements that only require compliance with RPBCWD’s Rule C, erosion prevention and sediment control. Sites #1 and #2 are exempt from RPBCWD’s Rule J, stormwater management because the proposed trails are 10-foot wide or less and bordered downgradient by pervious surfaces more than half the width of the trail.

The land-disturbing activity at site #3 consists of rehabilitating an existing 8-footwide bituminous trail between Galpin Boulevard over to Coulter Blvd in Chanhassen. Approximately 120 feet of trail adjacent to Galpin Boulevard will be regraded and realigned to reduce the trail slope. There is a high-value wetland located downgradient of the existing trail. Because a portion of realigned trail results in fill in the 100-year floodplain of the wetland, the project must demonstrate compliance with RPBCWD’s Rule B, floodplain management. The proposed activities at site #3 must also demonstrate compliance with RPBCWD’s Rule C, erosion prevention and sediment control and Rule D, wetland and creek buffers.

The project site information is summarized in the following table.

Project Site Information	Site 1 (acres)	Site 2 (acres)	Site 3 (acres)
Site Area	0.08	2.70	1.26
Existing Site Impervious	0.00	0.04	0.02
Post Construction Site Impervious	0.01	0.10	0.02
New (Increase) in Site Impervious Area	0.01	0.06	0.00
Disturbed Impervious Surface	0.00	0.04	0.02
Exempt Impervious Surface	0.01	0.10	0.02
Total Disturbed Area	0.08	0.31	0.15

The following materials were reviewed in support of the permit request:

1. Permit application received July 21, 2023. (Incomplete notice was sent on August 4, 2023; materials submitted to complete application on August 11, 2023)
2. Wetland Report dated July 12, 2023
3. Project Narrative dated July 21, 2023 (revised August 11, 2023)
4. Project plans dated July 21, 2023 (revised August 11, 2023).
5. MNRAM wetland classification received August 8, 2023
6. Comment Response memo received August 11, 2023

**Rule B: Floodplain Management and Drainage Alterations**

Because the project will involve fill in the floodplain below the 100-year flood elevation of the wetland at site #3 (elevation 934.8 feet), the project must conform to the requirements set forth by the RPBCWD

Floodplain Management and Drainage Alterations rule (Rule B, Subsection 2.2). (Again, Rule B is not triggered by the proposed work at sites 1 and 2, so analysis here pertains to site 3 only.)

Rule B, Subsections 3.1 and 3.4 do not impose requirements on the work because no buildings will be constructed or reconstructed as part of the project, and no impervious surface will be created or re-created within 50 feet of a watercourse.

The work will involve placing 23 cubic yards of fill and 26 cubic yards of compensatory storage below the flood elevation of the wetland. The project meets the requirements for compensatory storage for any fill placed in the floodplain at or below the same elevation by providing a net increase in storage of 3 cubic yards in the floodplain of the wetland, thus conforming with Rule B, Subsection 3.2.

Because the applicant has demonstrated and the engineer concurs that the project will preserve the existing 100-year flood level by providing a net increase in floodplain storage, the project will not alter surface flows, complying with subsection 3.3. In addition, the applicant proposes to restore disturbed, pervious areas with native vegetation to demonstrate that the land-disturbing activities are not reasonably likely to have an adverse impact on riparian habitat. The applicant included erosion control measures on the site drawings to comply with subsection 3.5. The information on the plan sheet includes a note indicating that activities must be conducted to minimize the potential transfer of aquatic invasive species conforming to Rule B, Subsection 3.6.

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

### **Rule C: Erosion and Sediment Control**

Because the applicant proposes more than 50 cubic yards of land-disturbing activities at site 1, 0.31 of land-disturbing activities acres at site 2 and 0.15 acres of land-disturbing activities at site 3, the project must conform to the requirements in the RPBCWD Erosion Prevention and Sediment Control rule (Rule C, Subsection 2.1).

The plans for each site include erosion control measures, prepared by HTPO include installation of stabilized construction entrance, sediment control log, floating silt curtain, placement of a minimum of 6 inches of topsoil (with 5% organic matter) in upland areas along access and associated with the culvert replacement, decompaction of pervious areas compacted during construction prior to topsoil placement, and retention of native topsoil onsite.

To conform to the RPBCWD Rule C requirements the following revisions are needed:

- C1. The Applicant must provide the name, address and phone number of the individual who will remain liable to the District for performance under this rule and maintenance of erosion and

sediment-control measures from the time the permitted activities commence until vegetative cover is established.

**Rule D: Wetland and Creek Buffers**

Because the proposed work triggers RPBCWD Rule B, subsection 2.1a of Rule D requires the applicant to establish buffer area adjacent to the wetland at site 3. Because the applicant plans land-disturbing activities upgradient of the wetland, wetland buffer must be provided along the portion of the wetland downgradient from the disturbance and on the property owned by the applicant (Rule D, subsection 3.1b). No work in the wetland itself is proposed.

The MnRAM analysis indicates the wetland is a high value. Rule D, Subsection 3.2.b.ii requires wetland buffer with an average of 60 feet from the delineated edge of the wetland, minimum 30 feet. Using buffer averaging (subsection 3.2e) the required buffer area for a 60-foot width buffer adjacent to the wetland is 6,600 square feet. Per Rule D, subsection 3.2c, the buffer must encompass all or part of a slope averaging 18% or greater. Because the buffer area extends to the top of slopes that average steeper than 18% and to the extent of existing, not-to-be-disturbed pavement the city right-of-way, the project conforms to Rule B, subsection 3.2c and 3.2g. However, the city proposes to reconstruct the trail within the buffer area.

The applicant’s proposed buffer totals 6,108 square feet with an average width of 55.5 feet, minimum 10 feet. The Applicant has requested a variance from the criteria of Rule D, Subsection 3.2.b.ii that require a minimum 30 feet buffer width from the delineated edge of a high value wetland, (see variance discussion below). The applicant also requested a variance from Rule D, Subsection 3.3.d, because the reconstruction of the trail within the minimum buffer width is not allowed based on subsection 3.3.d.

**Wetland buffer summary**

RPBCWD Wetland Value	Required Minimum Width (ft)	Required Average Width (ft)	Required Area (sq ft)	Provided Area (sq ft)	Provided Minimum Width (ft)	Provided Average Width (ft)
High	30	60	6,600	6,108	10	55.5

The plans require revegetating disturbed areas within the proposed buffer with native vegetation, thus conforming to 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 3.6.

The following revisions are needed to conform to the RPBCWD Rule D:

D1. Buffer areas and maintenance requirements must be documented in an agreement submitted in draft for form approval by RPBCWD. The agreement must include an exhibit clearly showing the buffer area and monument locations.

**Rule K: Variances and Exceptions**

The following table summarizes the Applicant’s request for two variances from the RPBCWD regulatory requirements.

**Variance request summary**

Variance number	Rule	Subsection	Requested Variance	Notes
1.	D	3.2	Buffer width	Not providing the minimum buffer width
2.	D	3.3.d	Impervious trail within minimum	Impervious trail is within minimum 30-foot buffer width

The attached variance request information submitted on behalf of the applicant cites several facts related to the development in support of the request. Rule K requires the Board of Managers to find that because of unique conditions inherent to the subject property the application of rule provisions will impose a practical difficulty on the Applicant. Assessment of practical difficulty is conducted against the following criteria:

1. how substantial the variation is from the rule provision;
2. the effect of the variance on government services;
3. whether the variance will substantially change the character of or cause material adverse effect to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties;
4. whether the practical difficulty can be alleviated by a technically and economically feasible method other than a variance. Economic hardship alone may not serve as grounds for issuing a variance if any reasonable use of the property exists under the terms of the District rules;
5. how the practical difficulty occurred, including whether the landowner, the landowner's agent or representative, or a contractor, created the need for the variance; and
6. in light of all of the above factors, whether allowing the variance will serve the interests of justice.

It is the applicant’s obligation to address these criteria to support a variance request.

The variance request is from the minimum width requirement for a high value wetland (Rule D, Subsection 3.2.b.ii). Subsection 3.2.b.ii states that buffer with a minimum width of 30 must be created. The applicant also requested a variance from Rule D, Subsection 3.3.d, to allow the reconstruction of the trail within the minimum buffer width (subsection 3.3.d). Because the two variance are connected to the location of the proposed trail within the buffer, they are concurrently analyzed below. For purposes of the Board of Managers’ consideration, the following factors were analyzed based on Rule K.

- Related to variance criterion 1 – The proposed wetland buffer will have minimum width of 10 feet, which is 33% of the required minimum from the trail.

- With regard to variance criteria 2 and 3 – The information submitted demonstrates that the proposed buffer minimum width of 10 feet will not alter the character of the resource because the existing minimum width between the existing trail is also 10 feet. The realigned trail will redirect 860 square feet of the trail away from the wetland and to an adjacent stormwater management facility.
- Technical measures considered to alleviate the practical difficulty (variance criterion 4) included rehabilitating the trail at the existing location. This alternative would keep the trail connect from Galpin at over and 18% grade while the proposed realignment reduces the slope to slightly over 12%, thus improving pedestrian mobility. The applicant is proposing to provide an additional 9,857 square feet of buffer averaging 60 feet wide, including buckthorn removal/treatment, adjacent to the same wetland further to the north from the proposed land disturbing activities. (see the applicant’s attached variance narrative).
- With regard to variance criterion 5, the applicant has created the need for the variance by reconstructing the trail to improve pedestrian mobility and city maintenance access off of Galpin Boulevard.

The engineer finds there is adequate technical basis for the managers to rely on to grant the requested variance from the minimum buffer width for the wetland and allowing the reconstructed trail within the minimum buffer width.

**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.
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 Rules B.
3. The proposed project will conform to Rule C if the Rule Specific Permit Conditions listed above are met.
4. The Applicant has requested variances from compliance with the Rule D criteria related to minimum buffer width for high value wetland and allowing an impervious trail within the minimum buffer width but will otherwise conform the Rule D if the Rule Specific Permit Condition listed above is met.
5. The proposed land-disturbing activities are exempt from RPBCWD Rule J, stormwater management criteria per Rule J, subsection 2.2.d.

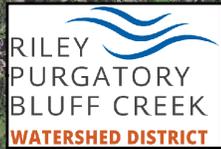
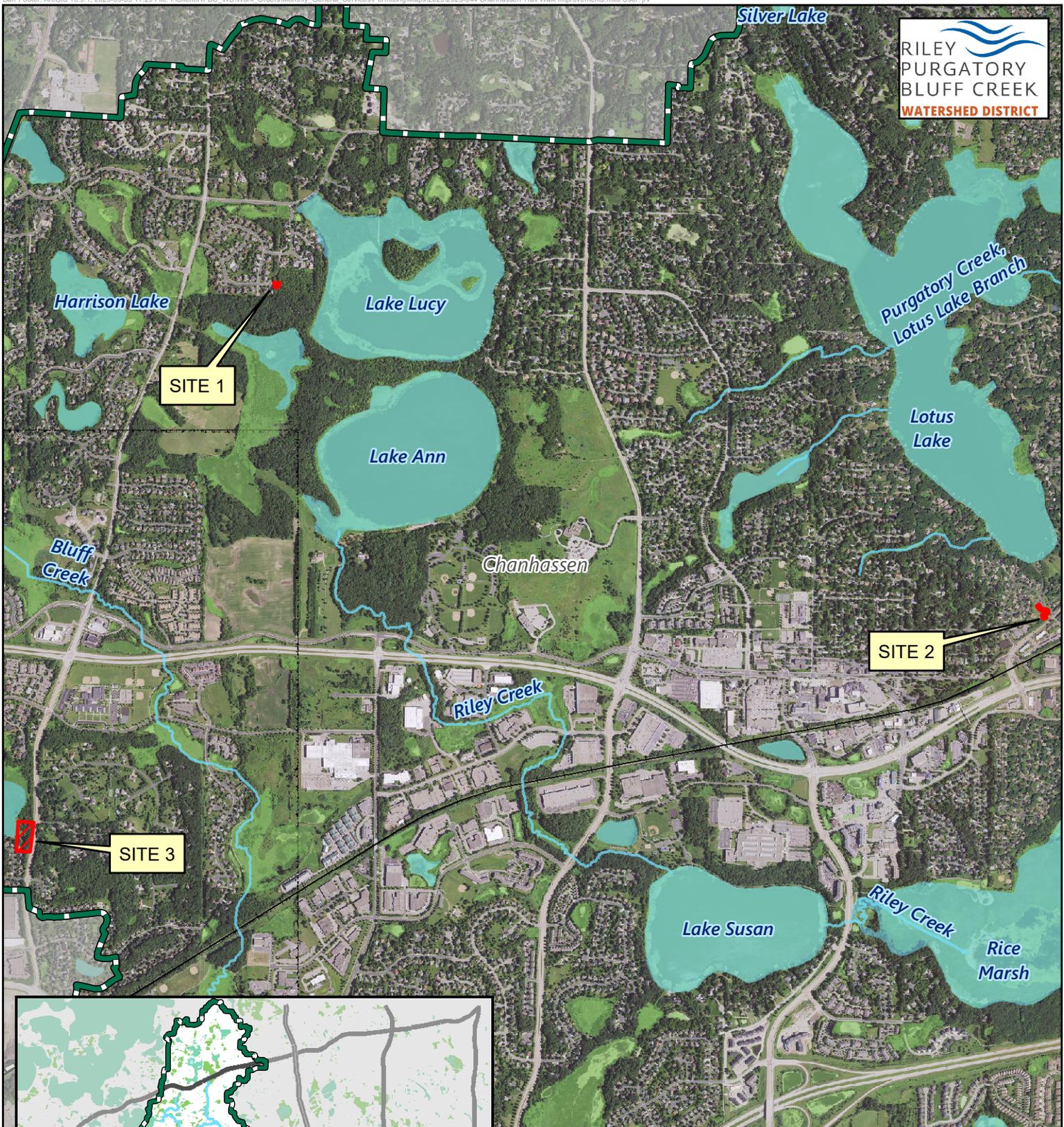
### **Recommendation:**

The engineer recommends approval of the permit, contingent upon:

1. Permit applicant must provide the name and contact information of the general contractor responsible for the site. RPBCWD must be notified if the responsible party changes during the permit term.
2. Buffer areas and maintenance requirements must be documented in an agreement submitted in draft for form for review and approval by RPBCWD. The agreement must include an exhibit clearly showing the buffer area and monument locations.

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

1. Continued compliance with General Requirements.



Permit Location Map

CHANHASSEN TRAIL WALK  
IMPROVEMENTS  
**Permit 2023-044**  
Riley Purgatory Bluff Creek  
Watershed District



Feet



**From:** [Adam Pawelk](#)  
**To:** [Scott Sobiech](#)  
**Subject:** RE: Carver County: Chanhassen - wetland delineation report on Galpin Blvd  
**Date:** Thursday, September 7, 2023 1:08:06 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image007.png](#)  
[image008.png](#)

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**CAUTION: This email originated from outside of your organization.**

Hi Scott,

We are requesting the watershed district consider a variance from the buffer requirements per Rule D, 3.2 and a variance from Rule D, 3.3d to allow construction of a trail within the buffer.

Let me know if you need any additional information.

Thank you

**Adam Pawelk, PE** (MN) | Principal

**HANSEN THORP PELLINEN OLSON, INC. (HTPO)**

**o** | 952.829.0700 **d** | 952.737.4052

**c** | 612.417.3370 **w** | [www.htpo.com](http://www.htpo.com)

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## Narrative

To: Riley-Purgatory-Bluff Creek Watershed District  
 From: HTPO  
 Date: 07/21/23, Revised 08/11/23  
 Subject: Wetland Buffer Variance Request for Project Location 3

### Project Overview

We are requesting the watershed district consider a variance from the buffer requirements. The information to follow describes the nature of the project and justifications for the request.

The proposed improvements for Project Location 3 consist of reclaiming and repaving an existing 8-foot-wide bituminous trail. The existing trail extends from Galpin Blvd over to Coulter Blvd in Chanhassen, MN. There is a wetland located down gradient of the existing trail.

### How substantial the variation is from the rule provision.

A wetland delineation along with a MnRAM assessment has been performed. The wetland delineation report will be submitted as part of this application. Based on the MnRAM assessment it was determined that the wetland classification is a “high” value. Therefore, the average buffer width is to be 60 feet with a minimum width of 30 feet.

The proposed buffer variance area is to the west/southwest of the relocated trail segment. Figure 1 and plan sheet 4 label the non-compliant buffer widths to the south/southwest of the proposed relocated trail.

The relocated trail is proposed to be 10 to 27 feet from the wetland boundary within the non-compliance area. Currently, the existing trail is also 10 to 27 feet from the wetland boundary, but the total area of non-compliance is less (about 1,584 sf less).

Area	Length within Project Area (ft)	Compliant Buffer Area (sf)	Non-Compliant Buffer Area (sf)	Existing/Proposed Minimum Buffer Width (ft)	Average Buffer Width (ft)	Reason for Non-Compliance
Existing Trail	110 ft and perpendicular to the slope	4833	2563	10 to 27	44	The existing trail is not in compliance with current buffer widths, likely due to construction before buffer rules were in place. Steep topography requires trail to be at base of roadway slope and adjacent to Wetland 1. Current trail segment is perpendicular to slope and therefore steep and unsafe.

Area	Length within Project Area (ft)	Compliant Buffer Area (sf)	Non-Compliant Buffer Area (sf)	Existing/Proposed Minimum Buffer Width (ft)	Average Buffer Width (ft)	Reason for Non-Compliance
Proposed Trail	120 ft and at a 45-degree angle to slope	3804+9857 =13,661	4147	10 to 17	114	Steep topography requires the trail to be at the base of the roadway slope and adjacent to Wetland 1. The proposed relocated trail segment will be at a ~45-degree angle to the slope so as to be more gradual and therefore safer for users.

**The effect of the variance on government services.**

The variance (which would allow for a less steep and more gradual downhill-sloping trail) will provide a safety benefit for government maintenance workers/vehicles, especially those that clear the trail in the winter.

**Whether the variance will substantially change the character of or cause materials adverse effect to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties.**

The relocated trail will not change the character of the area, affect the general welfare in the District, or be a substantial detriment to neighboring properties as there is already a trail in this general location. The wetland management classification of High Value (requiring the 30-ft minimum, 60-ft average buffer) results, at least partly, from the existing trail's proximity to the wetland (per MNRAM results).

The relocated trail will be no closer to the wetland than the existing trail. Land that is disturbed for trail construction will be revegetated. Floodplain fill will be mitigated as detailed in the table below (see plan sheet 4). The floodplain mitigation area will also be revegetated. Therefore, the project will not adversely affect the water resource (the wetland).

Floodplain Impacts		Floodplain Mitigation	
Area (sf)	466		
Existing Low Elevation (ft)	932.8	Area (sf)	1705
Floodplain Elevation (ft)	934.8	Average Existing Elevation (ft)	933.8
Average Elevation (ft)	934.1	Average Proposed Elevation (ft)	933.4
Average Fill Depth (ft)	1.35	Average Cut Depth (ft)	0.45
Volume (cy)	23	Volume (cy)	26

With regard to drainage, the increase in volume of runoff from the new trail compared with the existing trail is insignificant.

**Whether the practical difficulty can be alleviated by technical and economic methods other than a variance. Economic hardship alone may not serve as grounds for issuing a variance if reasonable use of the property exists under the terms of the District rules.**

Due to the proximity of this trail to Galpin Blvd, there is not sufficient space to move the trail out of the buffer. A second option that was considered is to keep the trail in its current layout and reclaim and repave this segment in place. However, this option does not resolve the issues that the current layout poses to the City and users as discussed in this document.

**How the practical difficulty occurred, including whether the landowner, the landowner's agent or representative, or a contractor, created the need for the variance.**

The location of the existing trail, both within the project area and beyond, does not always meet the 30-ft minimum, 60-ft average buffer width. A review of Google Earth aerial photos shows this trail to be in place as far back as 2002. It may be that when the trail was constructed, the current buffer width requirements were not in place.

The steep roadway slope of Galpin Blvd creates a practical difficulty. The existing trail is nearly perpendicular to the roadway slope and drops 12 feet from the road to the base of the slope over a distance of ~65 feet. The proposed relocated trail will drop 12 feet over ~95 feet with a new alignment that is at a 45-degree angle to the slope.

**In light of all the above factors, whether allowing the variance will serve the interests of justice.**

The proposed relocated trail, with a more gradual slope and with less abrupt curves, will provide a safer more accessible trail for all users (city maintenance staff, pedestrians) thereby serving the interests of justice.

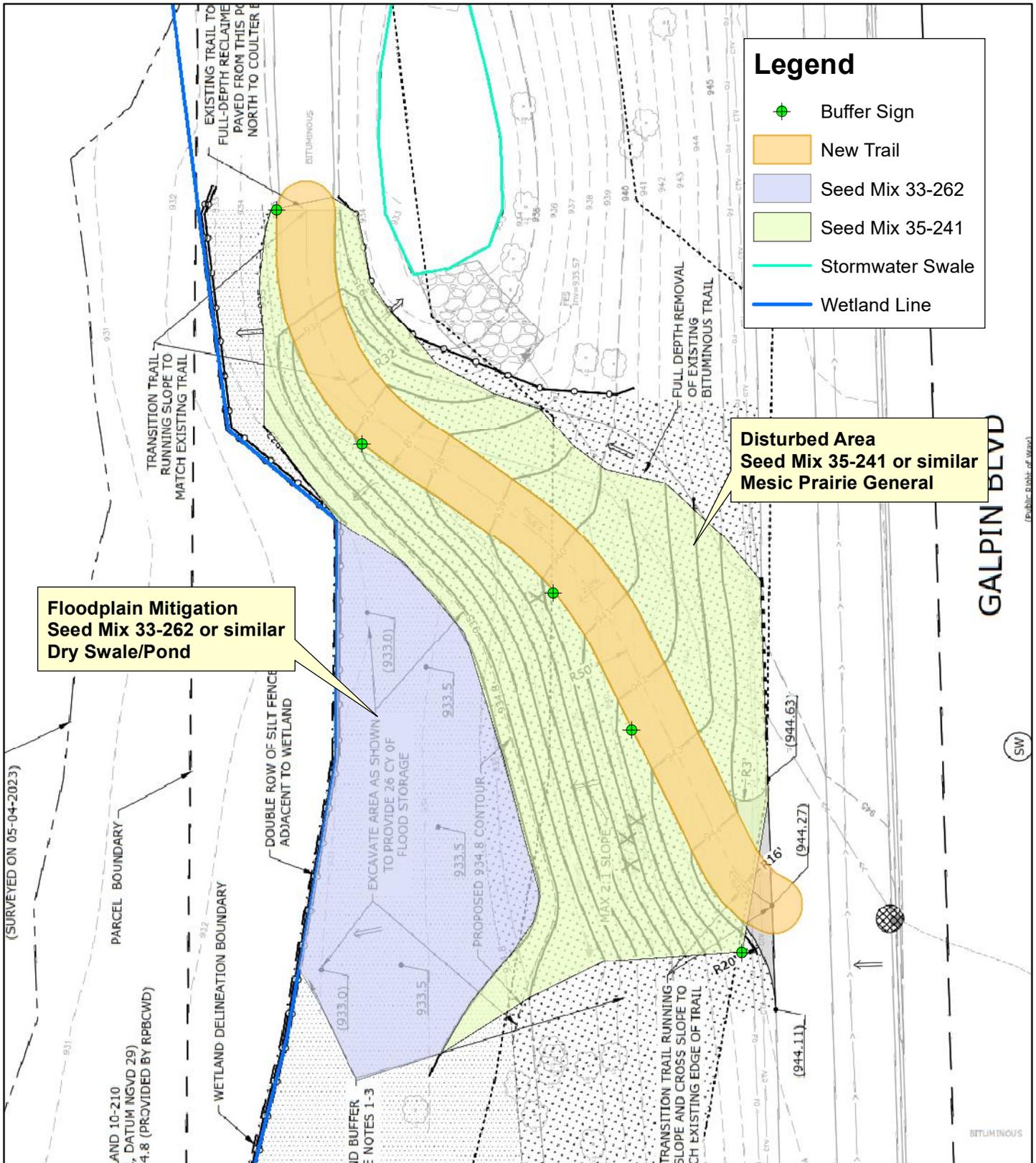
One of the reasons that this wetland was classified as high value was based on a "high" rating for aesthetics/recreation/education. Improving the layout of the trail will make the wetland more accessible thereby increasing the number of walkers and bikers who can enjoy this natural resource from both an aesthetics perspective as well as a recreational perspective. Additionally, increasing the number of users who use this trail can lead to an increase in wetland education.

Because the existing trail and the proposed relocated trail do not meet current buffer width requirements, vegetative restoration of existing buffer to the north of the project area (Figure 2 and plan sheet 5) is proposed to compensate for the deficit of total buffer area provided along the relocated trail segment. The project work will include removing and treating common buckthorn and other invasive species within this wooded buffer area. The buffer restoration area is proposed to be over twice as large as the impacted (deficit) buffer area.

To conclude, we hope the watershed district will grant a variance from the buffer requirements so that this trail segment can be properly aligned to improve the overall safety and usability of this trail thus creating better access to the wetland for all users.

We thank you for your consideration of this request.

Figure 1



**Revegetation Areas**



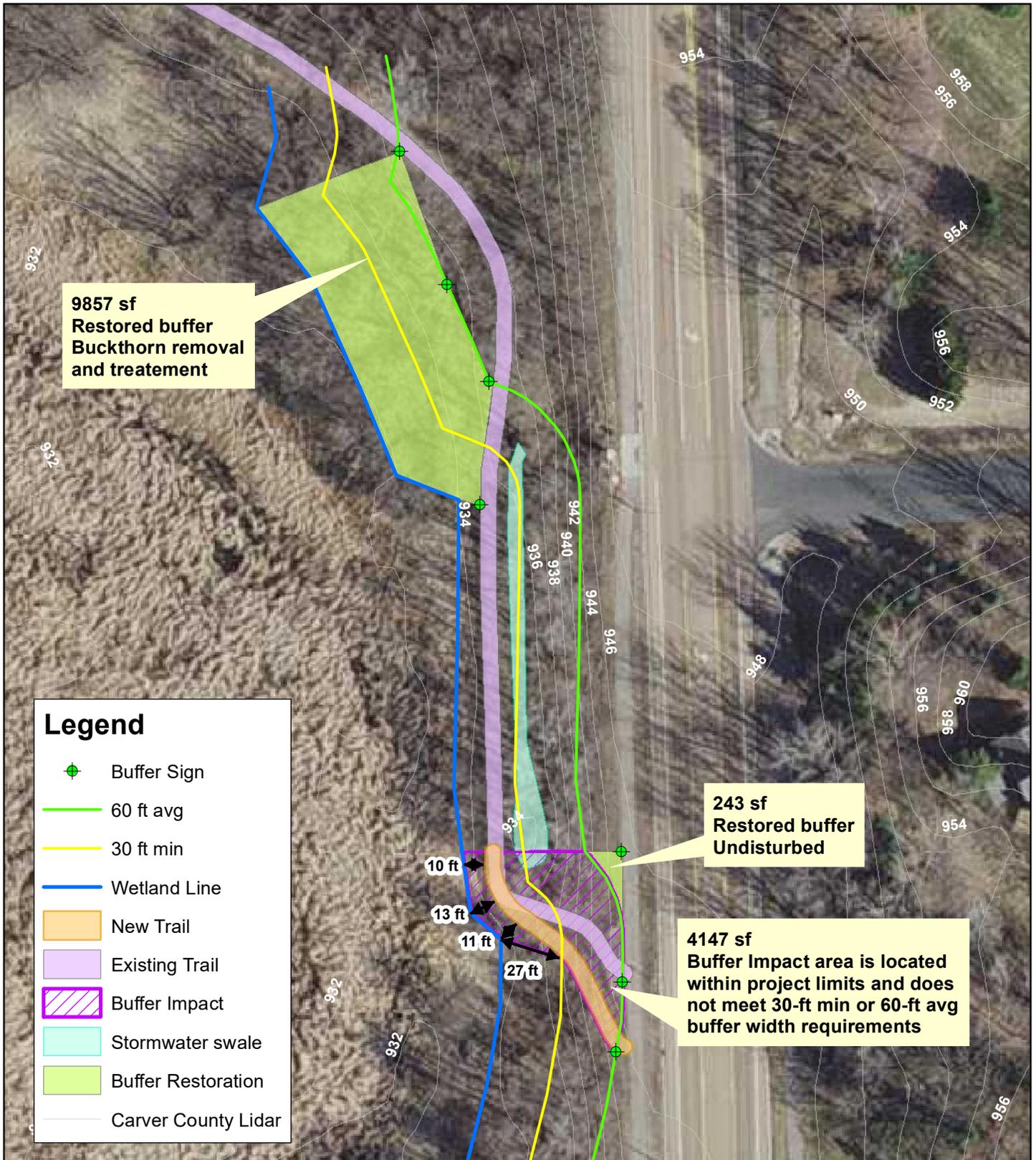
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**Galpin Blvd - Trail Improvements (KES 2023-040)**  
**Chanhasen, Minnesota**



**KJOLHAUG** ENVIRONMENTAL SERVICES COMPANY  
Source: MNGEO Spatial Commons, USFWS

Note: Boundaries indicated on this figure are approximate and do not constitute an official survey product.



**Proposed Conditions (2020 Metro Photo)**



**KJOLHAUG** ENVIRONMENTAL SERVICES COMPANY  
Source: MNGEO Spatial Commons, USFWS

N



0 100 Feet



**Galpin Blvd - Trail Improvements (KES 2023-040)**  
**Chanhasen, Minnesota**

Note: Boundaries indicated on this figure are approximate and do not constitute an official survey product.

# CONSTRUCTION PLANS FOR: CHANHASSEN TRAIL/WALK IMPROVEMENTS

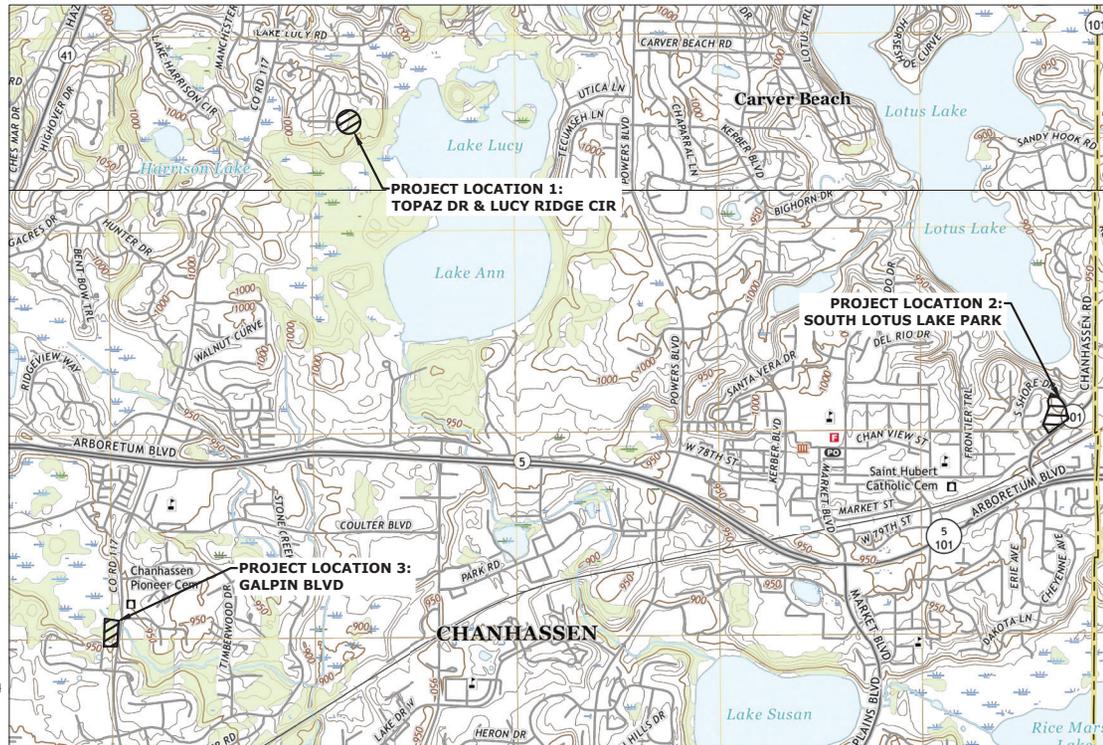
PREPARED FOR:  
CITY OF CHANHASSEN

## SHEET INDEX

- 1 COVER SHEET
- 2-4 CONSTRUCTION PLAN
- 5 WETLAND BUFFER RESTORATION PLAN
- 6-7 DETAILS
- 8-13 MNDOT STANDARD ADA PLATES
- 14-18 PLANTING DETAILS

## EXISTING LEGEND

- HYDRANT
  - WATER VALVE
  - SANITARY MANHOLE
  - ◄ FLARED END SECTION
  - CATCH BASIN
  - ★ LIGHT
  - POWER POLE
  - TRANSFORMER
  - ⊕ ELECTRIC METER
  - ⊕ GAS VALVE
  - ⊕ TELEPHONE BOX
  - ⊕ GAS METER
  - ⊕ ELECTRICAL METER
- 
- TREE
  - THN TOP NUT HYDRANT
  - OHU OVERHEAD UTILITY
  - ELC ELECTRIC LINE
  - GAS GAS MAIN
  - WM WATER MAIN
  - SS SANITARY SEWER
  - SSS STORM SEWER
  - FO FIBER OPTIC LINE
  - TEL TELEPHONE LINE
  - CLF CHAIN LINK FENCE
  - PROPERTY BOUNDARY
  - ELECTRIC DISTRIBUTION EASEMENT
  - SECTION
  - CONTOUR



LOCATION MAP (NOT TO SCALE)

## GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROJECT PLANS AND CITY SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS PRIOR TO CONSTRUCTION INCLUDING EXISTING ELEVATIONS AND TOPOGRAPHY PRIOR TO COMMENCING GRADING OPERATIONS. IF DISCREPANCIES OCCUR BETWEEN PLANS AND ACTUAL SITE CONDITIONS, NOTIFY ENGINEER IMMEDIATELY.
3. PRIOR TO GRADING ACTIVITIES, TOPSOIL, ROOTS, AND OTHER ORGANIC MATERIAL SHALL BE COMPLETELY STRIPPED IN NEW PAVEMENT AREAS AND ONLY STRIPPED AS NEEDED IN GREENSPACE AREAS. EXISTING TOPSOIL SHALL BE STOCKPILED FOR REUSE.
4. CONTRACTOR SHALL DETERMINE LOCATION OF EXISTING PUBLIC AND PRIVATE UTILITIES PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR PRESERVING THESE. ANY REPAIRS NECESSARY DUE TO CONTRACTOR'S OPERATIONS SHALL BE MADE AT CONTRACTOR'S EXPENSE. BEFORE DIGGING CALL: GOPHER STATE ONE CALL (651) 454-0002.
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL "C". THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02, ENTITLED "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."
6. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFETY MEASURES TO SAFEGUARD VEHICLES AND PEDESTRIAN TRAFFIC.
7. CONTRACTOR SHALL KEEP ALL PAVED SURFACES FREE OF SEDIMENT. PAVED SURFACES SHALL BE SWEEP AS NEEDED OR AS DIRECTED BY THE CITY OR ENGINEER.
8. INSTALL EROSION AND SEDIMENT CONTROL MEASURES BEFORE ANY LAND DISTURBING ACTIVITIES TAKE PLACE AS SHOWN ON THE PLANS OR AS DIRECTED.
9. RESTORE ALL DISTURBED AREAS, INCLUDING PAVEMENT, TO EXISTING CONDITIONS OR BETTER.
10. EXISTING PAVEMENT SHALL BE PRESERVED WHEREVER POSSIBLE. COORDINATE PAVEMENT REMOVAL AREAS WITH SITE PLAN. SAWCUT (NO JACKHAMMERING) ALONG EXISTING PAVEMENT TO CREATE SMOOTH TRANSITIONS BETWEEN EXISTING AND NEW PAVEMENT. SAWCUT CONCRETE PAVEMENT AND CURB & GUTTER TO NEAREST JOINT.
11. CONSTRUCTION SHALL BE CONDUCTED SO AS TO MINIMIZE THE POTENTIAL TRANSFER OF AQUATIC INVASIVE SPECIES (E.G., ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC.) TO THE MAXIMUM EXTENT POSSIBLE.

## STANDARD ESC NOTES FOR RILEY PURGATORY BLUFF CREEK WATERSHED

1. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
2. 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.
3. 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.
4. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
5. 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.
6. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION.
7. 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.
8. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
9. 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	ISSUES / REVISIONS	SHEET
1	07-21-23	WATERSHED PERMIT SUBMITTAL	1
2	08-11-23	WATERSHED PERMIT RE-SUBMITTAL	OF
			18



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MINNESOTA LAW REQUIRES EXCAVATORS TO NOTIFY THE REGIONAL NOTIFICATION CENTER AT LEAST TWO BUSINESS DAYS BUT NOT MORE THAN FOURTEEN (14) CALENDAR DAYS PRIOR TO EXCAVATION.  
GOPHER STATE ONE CALL  
www.gopherstateonecall.org  
1-800-252-1166

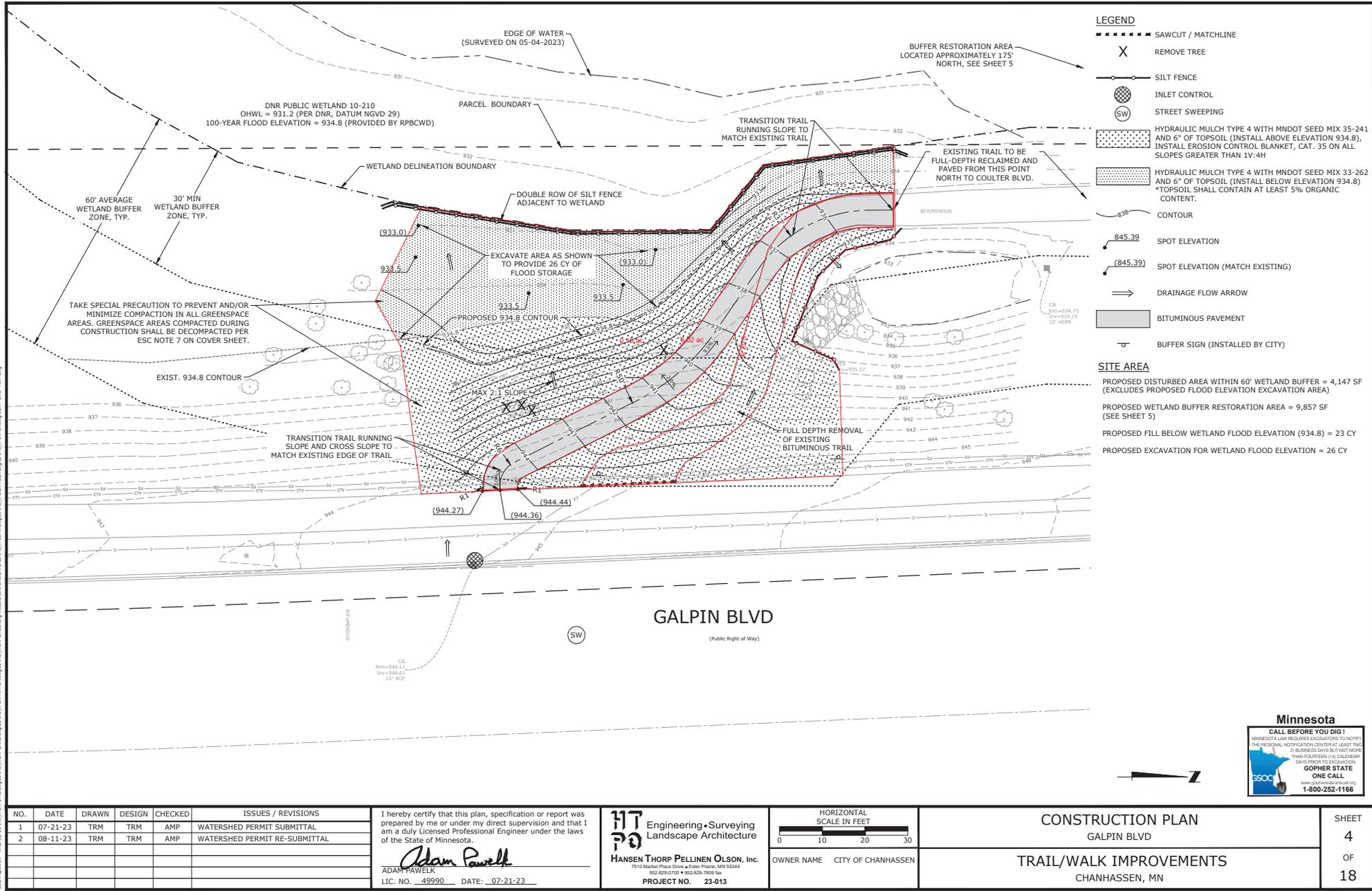
**HT PO** Engineering • Surveying  
Landscape Architecture  
**HANSEN THORP PELLINEN OLSON, Inc.**  
7510 Market Place Drive • Eden Prairie, MN 55344  
952-828-0700 • 952-829-7806 fax  
PROJECT NO. 23-013

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.  
*Adam Pawelk*  
ADAM PAWELK  
LIC. NO. 49990 DATE: 07-21-23





FILE: P:\2023\2023-01-03 - Chanhassen Trail - Walkway Improvements\23-01-03\_CIVIL\CONSTRUCTION SITE.dwg LAYOUT: 003  
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NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
1	07-21-23	TRM	TRM	AMP	WATERSHED PERMIT SUBMITTAL
2	08-11-23	TRM	TRM	AMP	WATERSHED PERMIT RE-SUBMITTAL

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 ADAM PAWELK  
 LIC. NO. 49990 DATE: 07-21-23

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 Landscape Architecture  
**HANSEN THORP PELLIN OLSON, Inc.**  
 7510 Market Place Drive • Eden Prairie, MN 55344  
 952-928-0709 • 952-928-7500 fax  
 PROJECT NO. 23-013

HORIZONTAL SCALE IN FEET  
 0 10 20 30

OWNER NAME CITY OF CHANHASSEN

CONSTRUCTION PLAN  
 GALPIN BLVD  
 TRAIL/WALK IMPROVEMENTS  
 CHANHASSEN, MN

SHEET  
 4  
 OF  
 18



FILE P: 20230203\_01 - Chanhasen Trail - Walk Improvements CADW/ANSHE/TS/AL/23-010\_CIVCONSTRUCTION SITE.dwg LAYOUT 1.dwg  
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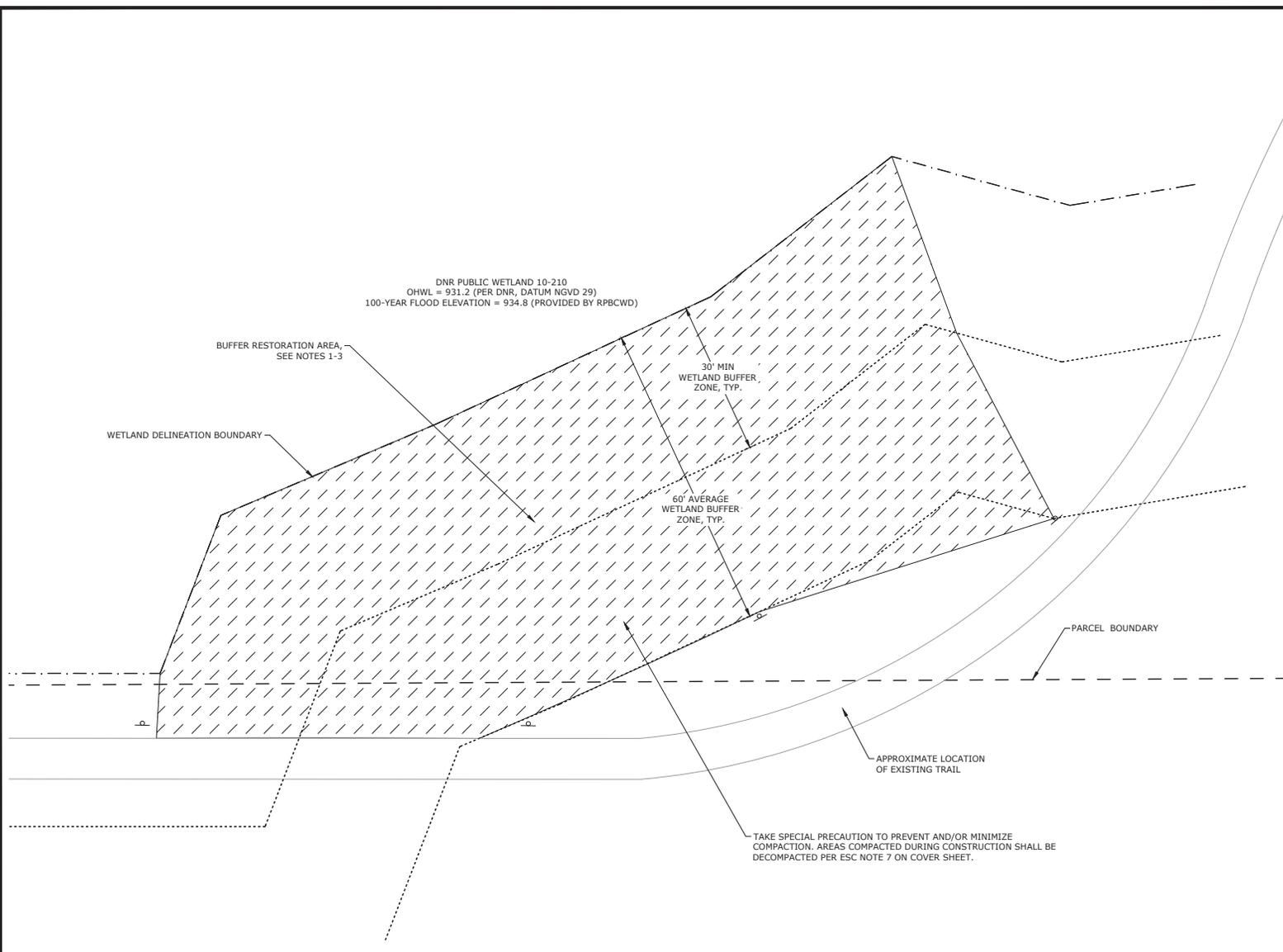
**LEGEND**

 BUFFER RESTORATION AREA

 BUFFER SIGN (INSTALLED BY CITY)

- NOTES**
- BUFFER RESTORATION AREA SHALL INCLUDE THE FOLLOWING:
    - HERBICIDE APPLICATION
    - COMMON BUCKTHORN REMOVAL AND TREATMENT
    - INVASIVE SPECIES REMOVAL AND TREATMENT
  - HERBICIDES USED MUST BE REGISTERED WITH THE MINNESOTA DEPARTMENT OF AGRICULTURE.
  - HERBICIDES SHALL BE APPLIED BY A LICENSED COMMERCIAL PESTICIDE APPLICATOR.

**SITE AREA**  
 PROPOSED WETLAND BUFFER RESTORATION AREA = 9,857 SF



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 GOPHER STATE ONE CALL  
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 1-800-252-1166

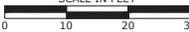
NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
1	07-21-23	TRM	TRM	AMP	WATERSHED PERMIT SUBMITTAL
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 ADAM PAWELK  
 LIC. NO. 49990 DATE: 07-21-23

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 7510 Market Place Drive • Eden Prairie, MN 55344  
 952-928-0709 • 952-928-7500 fax  
 PROJECT NO. 23-013

HORIZONTAL SCALE IN FEET  


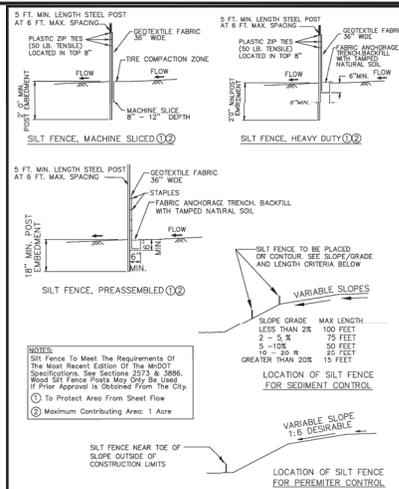
OWNER NAME CITY OF CHANHASSEN

**WETLAND BUFFER RESTORATION PLAN**  
 GALPIN BLVD

**TRAIL/WALK IMPROVEMENTS**  
 CHANHASSEN, MN

SHEET 5 OF 18

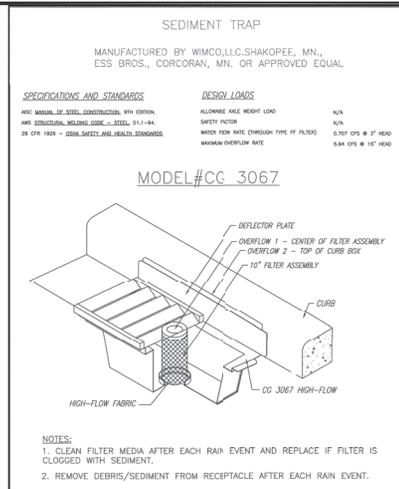
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**CITY OF CHANHASSEN**

**SILT FENCE**

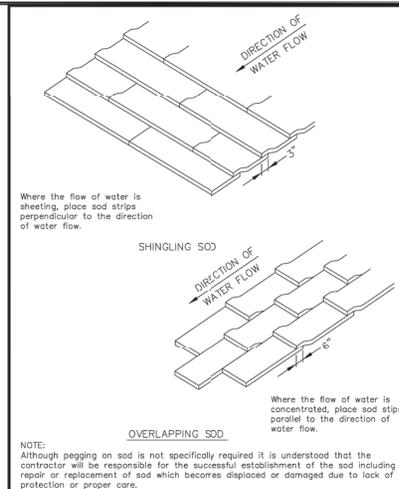
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 ENGINEERING DEPARTMENT  
 PLATE NO.: 5300



**CITY OF CHANHASSEN**

**CATCH BASIN SEDIMENT TRAP**

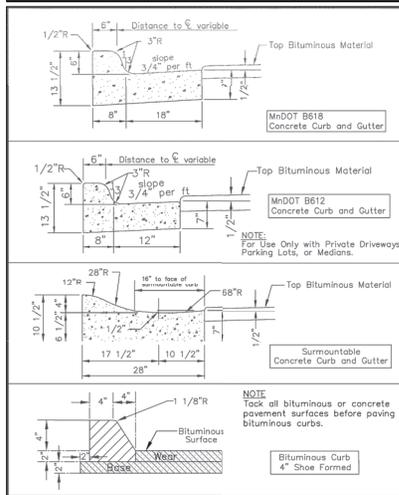
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 PLATE NO.: 5302A



**CITY OF CHANHASSEN**

**SOD PLACEMENT**

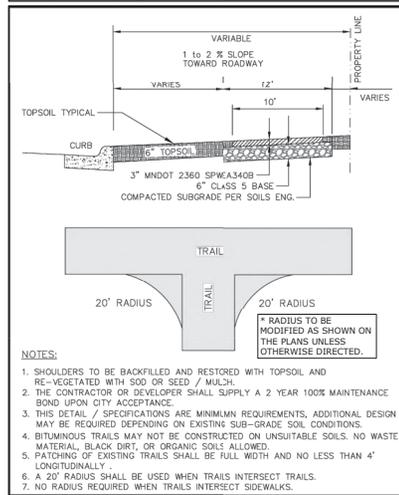
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 ENGINEERING DEPARTMENT  
 PLATE NO.: 5303



**CITY OF CHANHASSEN**

**TYPICAL CURB AND GUTTER**

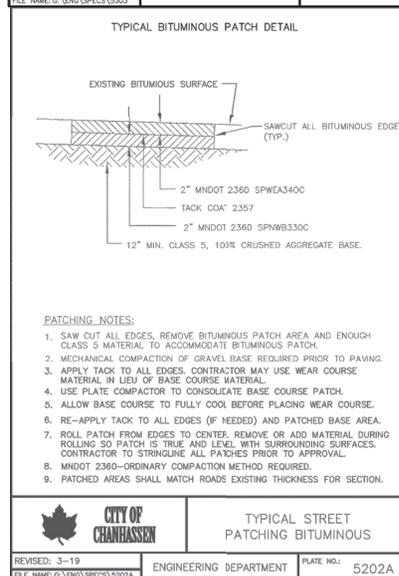
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 PLATE NO.: 5203



**CITY OF CHANHASSEN**

**BITUMINOUS TRAIL**

REVISED: 3-23  
 FILE NAME: G:\VEND\SPECS\5216  
 ENGINEERING DEPARTMENT  
 PLATE NO.: 5216



**CITY OF CHANHASSEN**

**CONCRETE SIDEWALK**

REVISED: 3-23  
 FILE NAME: G:\VEND\SPECS\5214  
 ENGINEERING DEPARTMENT  
 PLATE NO.: 5214

NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
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2	08-11-23	TRM	TRM	AMP	WATERSHED PERMIT RE-SUBMITTAL

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*Adam Pawelk*  
 ADAM PAWELK  
 LIC. NO. 49990 DATE: 07-21-23

**HT Engineering • Surveying**  
**LS Landscape Architecture**

**HANSEN THORP PELLIN OLSON, INC.**  
 7510 Market Place Drive • Eden Prairie, MN 55344  
 952-928-0709 • 952-928-7058 fax  
 PROJECT NO. 23-013

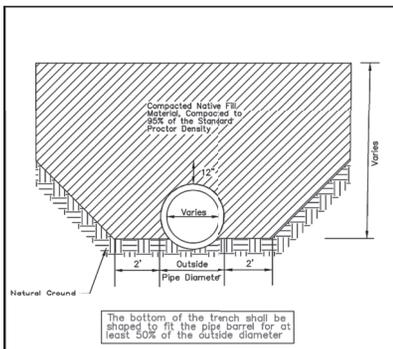
OWNER NAME: CITY OF CHANHASSEN

**DETAILS**

**TRAIL/WALK IMPROVEMENTS**  
 CHANHASSEN, MN

SHEET 6 OF 18

FILE: P:\2023\2023-03 - Chanhassen Trail - Walk Improvements\CAD\WORKSPACE\DETAILS\23-03-01\_DETAILS.dwg LAYOUT: 2  
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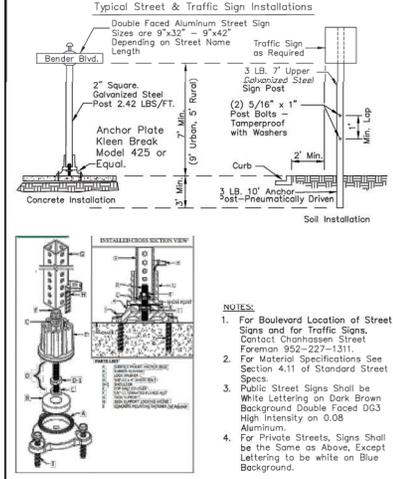


- NOTES:**
- When existing soil conditions are not acceptable for backfill and/or compaction in the pipe zone, pipe bedding and backfill shall be used as shown on detail plate 2201.
  - Trench slopes shall conform to current OSHA rules and regulations for excavations and trenches.

**CITY OF CHANHASSEN** PIPE BEDDING IN GOOD SOILS RCP & DIP

REVISED: 11-18  
 FILE NAME: G:\VEND\SPCS\2202

ENGINEERING DEPARTMENT PLATE NO.: 2202



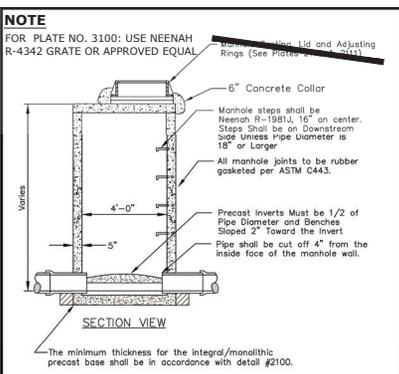
- NOTES:**
- For Boulevard Location of Street Signs and for Traffic Signs, Contact Chanhassen Street Foreman 952-227-1311.
  - For Material Specifications See Section 4.11 of Standard Street Specs.
  - Public Street Signs Shall be White Lettering on Dark Brown Background Double Faced DG3 High Intensity on 0.08 Aluminum.
  - For Private Streets, Signs Shall be the Same as Above, Except Lettering to be white on Blue Background.

**CITY OF CHANHASSEN** STREET AND TRAFFIC SIGN INSTALLATION

REVISED: 3-23  
 FILE NAME: G:\VEND\SPCS\5217

ENGINEERING DEPARTMENT PLATE NO.: 5217

NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
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2	08-11-23	TRM	TRM	AMP	WATERSHED PERMIT RE-SUBMITTAL

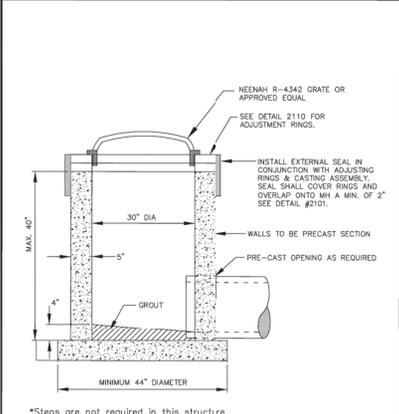


- NOTE**
- All dog houses shall be grouted both inside and outside of the structure.
  - When the manhole or catch basin structure is constructed outside of the traveled roadway a witness post and sign (MH) shall be installed behind the MH.
  - If a sump MH is required, a minimum sump depth of 4' shall be constructed below the lowest pipe invert in the structure.
- Each structure shall be checked for buoyancy and certified by the Engineer of record that flotation will not occur.

**CITY OF CHANHASSEN** STANDARD STORM MANHOLE

REVISED: 2-23  
 FILE NAME: G:\VEND\SPCS\3100

ENGINEERING DEPARTMENT PLATE NO.: 3100



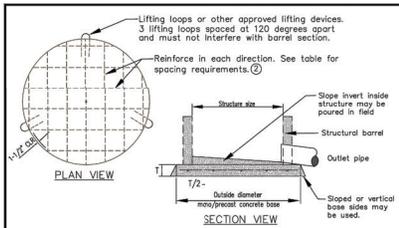
**CITY OF CHANHASSEN** CATCH BASIN 30" DIAMETER

REVISED: 3-23  
 FILE NAME: G:\VEND\SPCS\5303

ENGINEERING DEPARTMENT PLATE NO.: 5303

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*Adam Pawelek*  
 ADAM PAWELAK  
 LIC. NO. 49990 DATE: 07-21-23



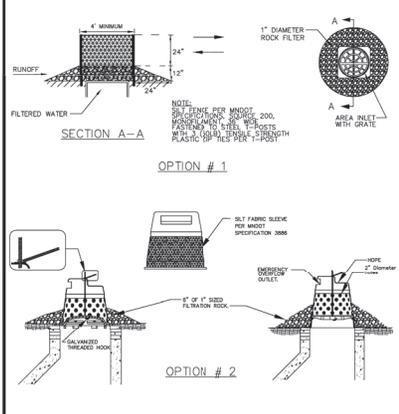
STRUCTURE SIZE (INCHES)	OUTSIDE DIAMETER (INCHES)	MINIMUM REINFORCING BAR #	MINIMUM REINFORCING BAR SIZE (INCHES)	SPACING (INCHES)	APPROX WEIGHT (LBS)
30	44	4	4	12	795
48	64	5	4	12	1680
64	79	6	4	12	2600
60	78	8	4	12	3320
78	93	6	4	12	3940
96	95	6	4	12	2420
96	100	8	4	12	3420
64	105	8	4	8	4230
84	114	8	4	8	7090
96	120	8	4	8	7850
108	127	8	4	8	8690
108	130	9	4	8	10590
120	146	12	4	8	17440
120	150	12	4	8	20440
144	174	12	4	6	24770

- NOTE:**
- Alternate T = 10" number 4 bars spaced at 10" on centers.
  - Wire mesh of an equivalent bar size may be used upon engineers approval.
  - Structures over 16' in height shall have base thickness certified by Engineer of record.

**CITY OF CHANHASSEN** MONOLITHIC/PRECAST CONCRETE BASE THICKNESS

REVISED: 3-23  
 FILE NAME: G:\VEND\SPCS\2100

ENGINEERING DEPARTMENT PLATE NO.: 2100



**CITY OF CHANHASSEN** OFFROAD CATCHBASIN FILTER BARRIER OPTIONS 1 & 2

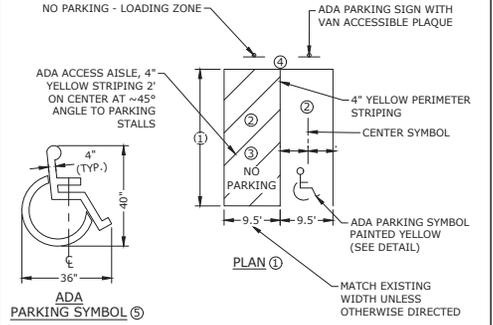
REVISED: 2-22  
 FILE NAME: G:\VEND\SPCS\5302G

ENGINEERING DEPARTMENT PLATE NO.: 5302G

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 Landscape Architecture

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 952-828-0700 • 952-828-7050 fax  
 PROJECT NO. 23-013

OWNER NAME: CITY OF CHANHASSEN

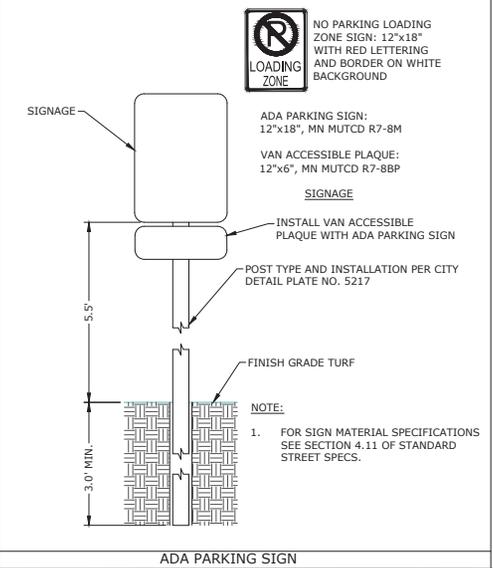


- KEY NOTES:**
- SEE SITE PLANS FOR ADA PARKING AREA LOCATIONS.
  - SLOPES SHALL NOT EXCEED 2.0% IN ANY DIRECTION IN DISABLED PARKING AREAS.
  - PAINT "NO PARKING" WHERE SHOWN. MIN 12" LETTER HEIGHT, YELLOW.
  - INSTALL SIGN 2.0' FROM BACK OF CURB UNLESS OTHERWISE SHOWN ON PLANS.
  - INTERNATIONAL SYMBOL OF ACCESSIBILITY.

**CITY OF CHANHASSEN** ADA PARKING SYMBOL

REVISED: 2-23  
 FILE NAME: G:\VEND\SPCS\5210

ENGINEERING DEPARTMENT PLATE NO.: 5210

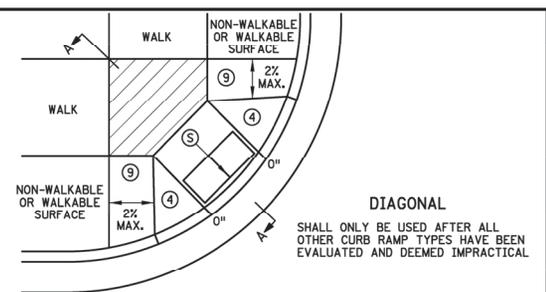
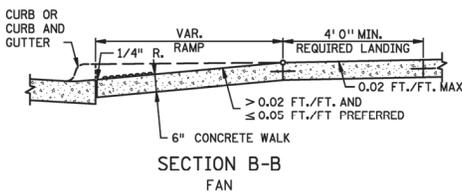
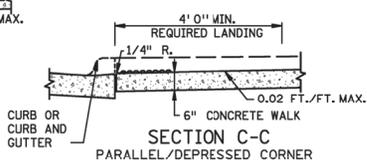
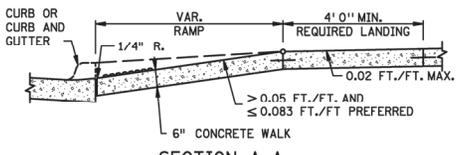
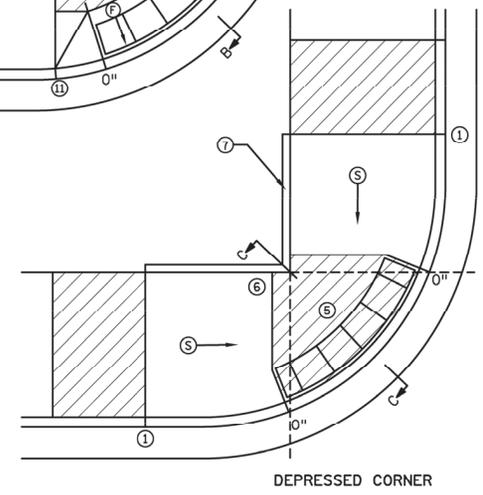
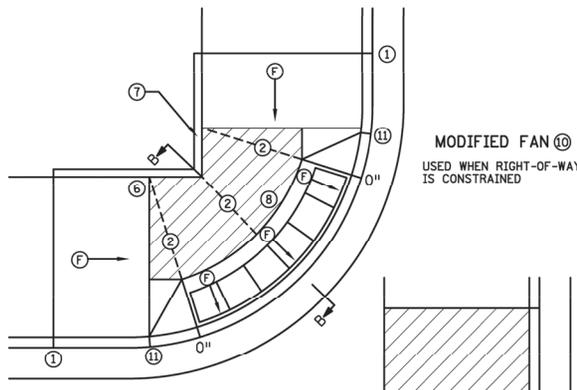
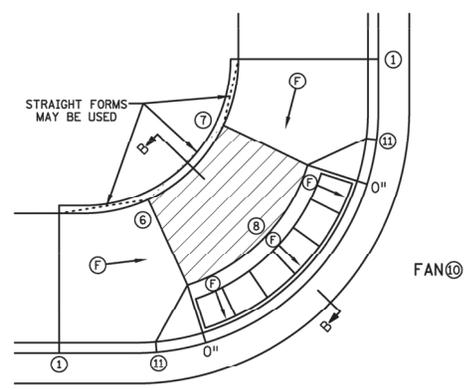
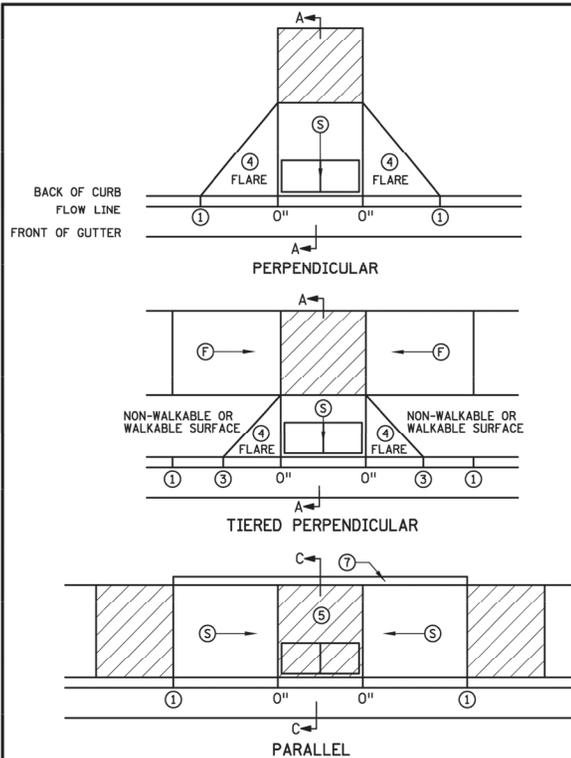


**CITY OF CHANHASSEN** ADA PARKING SIGN

REVISED: 2-23  
 FILE NAME: G:\VEND\SPCS\5210G

ENGINEERING DEPARTMENT PLATE NO.: 5210G

**TRAIL/WALK IMPROVEMENTS**  
 CHANHASSEN, MN



- NOTES:**
- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB WITH 5' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED IN (C) BELOW.
- TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE. MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.
- ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.
- WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
- RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
- 1 MATCH FULL HEIGHT CURB.
  - 2 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
  - 3 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
  - 4 SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
  - 5 DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
  - 6 THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK, THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
  - 7 WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
  - 8 A 7" MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.
  - 9 PAVE FULL WALK WIDTH.
  - 10 "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.
  - 11 INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2" INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.2% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
[Hatched Box]	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

REVISIONS:

APPROVED: 11-04-2021

*Jeff J. Pel...*

OPERATIONS DIVISION

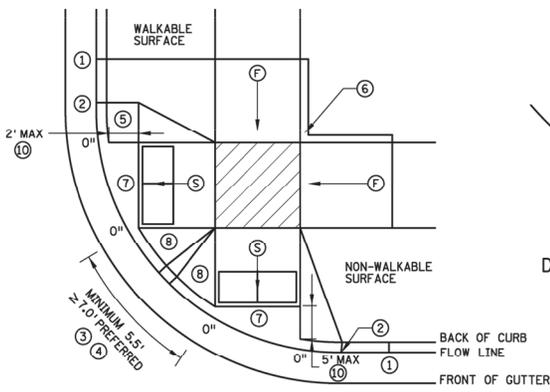
**MINNESOTA**  
DEPARTMENT  
OF  
TRANSPORTATION

STANDARD PLAN 5-297.250 1 OF 6

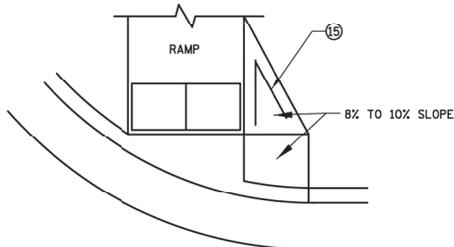
APPROVED: 11-04-2021  
REVISED:

THOMAS TYBICKI  
STATE DESIGN ENGINEER

STATE PROJ. NO. (TH ) SHEET NO. 8 OF 18 SHEETS

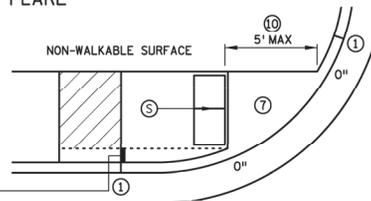


COMBINED DIRECTIONAL

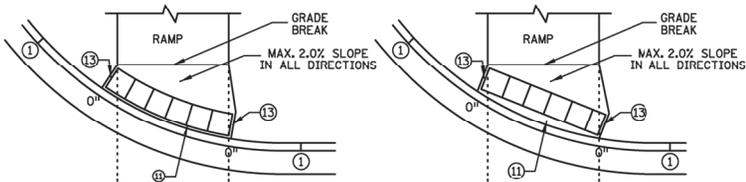


DIRECTIONAL RAMP WALKABLE FLARE

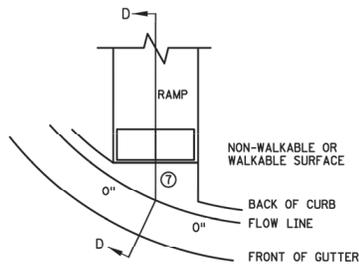
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



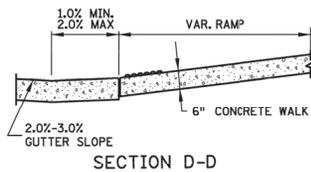
STANDARD ONE-WAY DIRECTIONAL (9)



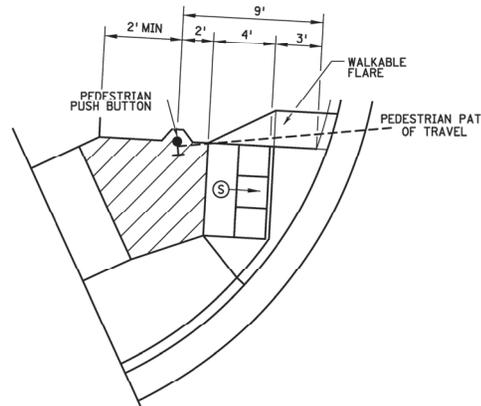
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS (14)



SECTION D-D



SEMI-DIRECTIONAL RAMP (3)(4)(9)

3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB  
 PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR, 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES (10) & (11) FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

(1) MATCH FULL CURB HEIGHT.

(2) 3" HIGH CURB WHEN USING A 3' LONG RAMP  
 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(3) 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)  
 4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

(4) THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

(5) WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

(6) GRADING SHALL ALWAYS BE USED WHEN FEASIBLE, V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(7) MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

(8) 8% TO 10% WALKABLE FLARE.

(9) PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

(10) FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

(11) RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

(12) FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

(13) THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

(14) TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

(15) PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
↑	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

REVISION:  
 APPROVED: 11-04-2021  
 Jeff J. Pel...  
 OPERATIONS DIVISION



STANDARD PLAN 5-297.250

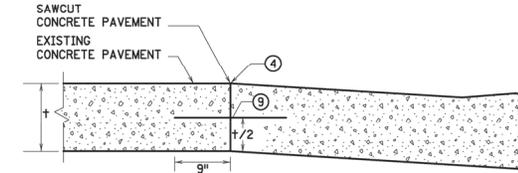
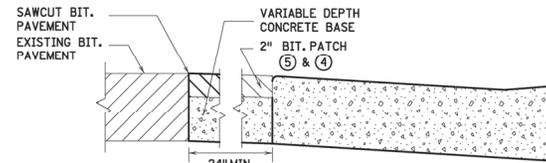
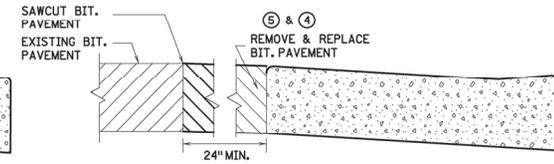
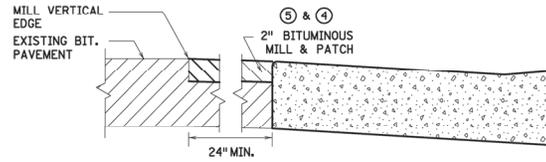
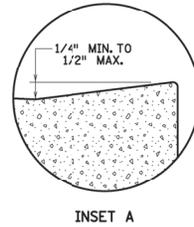
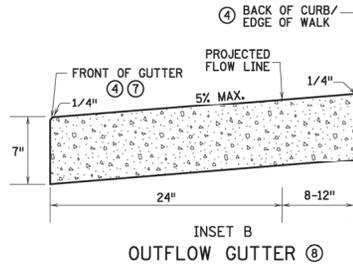
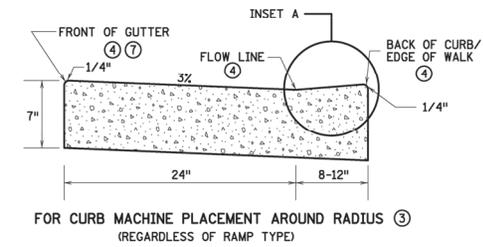
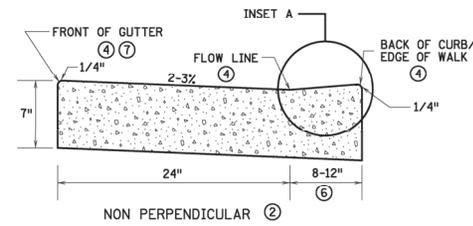
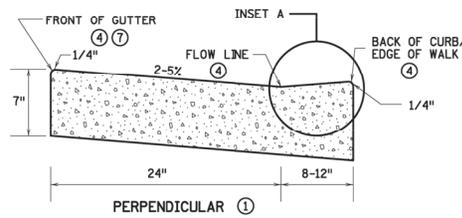
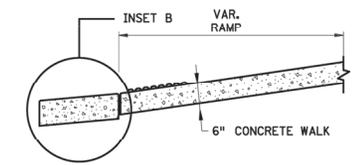
2 OF 6

PEDESTRIAN CURB RAMP DETAILS

THOMAS STYBICKI  
 STATE DESIGN ENGINEER

APPROVED: 11-04-2021  
 REVISED:  
 STATE PROJ. NO.

(T.H. ) SHEET NO. 9 OF 18 SHEETS

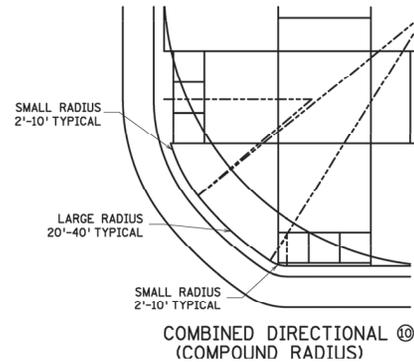
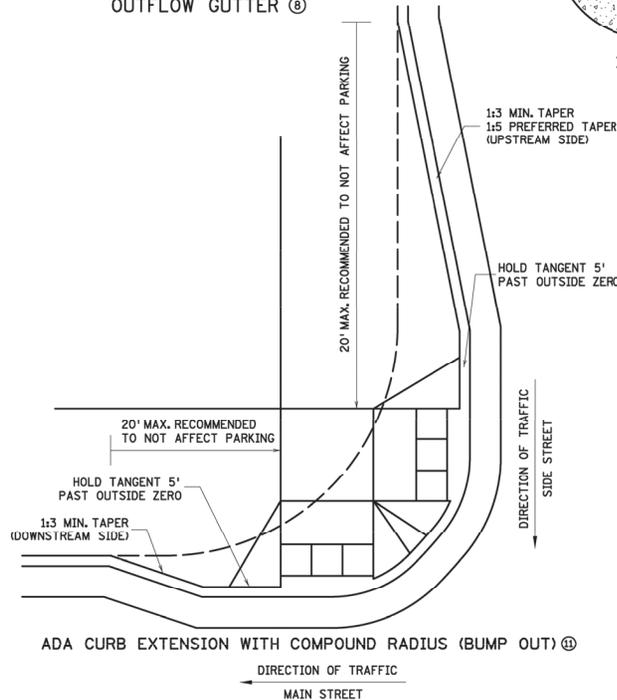


ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER  
FOR USE ON CURB RAMP RETROFITS

NOTES:

- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
- ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4" INCH.
- ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
- ② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
- ③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
- ④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- ⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
- ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
- ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
- ⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
- ⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
- ⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
- ⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.



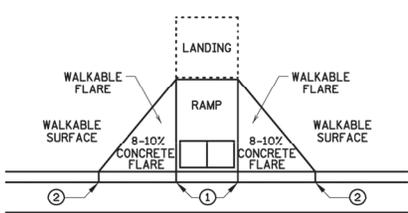
REVISION:  
APPROVED: 11-04-2021  
*Jeff J. Pel...*  
OPERATIONS DIVISION

MINNESOTA  
DEPARTMENT OF TRANSPORTATION

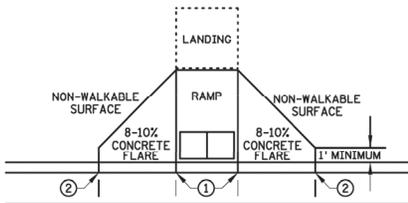
STANDARD PLAN 5-297.250 3 OF 6  
APPROVED: 11-04-2021  
REVISED:  
THOMAS TYBICKI  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

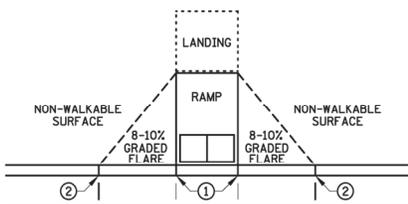
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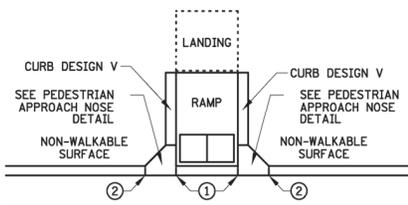
PAVED FLARES  
ADJACENT TO WALKABLE SURFACE



PAVED FLARES  
ADJACENT TO NON-WALKABLE SURFACE

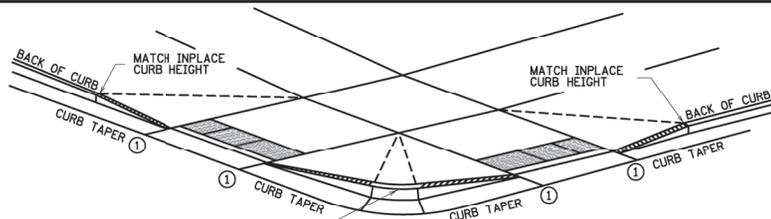


GRADED FLARES



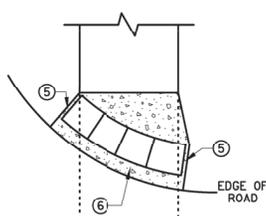
RETURNED CURB ④

TYPICAL SIDE TREATMENT OPTIONS ③ ⑩

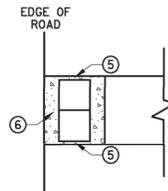


3" MINIMUM CURB HEIGHT, 4" PREFERRED  
(MEASURED AT FRONT FACE OF CURB)  
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑦  
CURB AND GUTTER

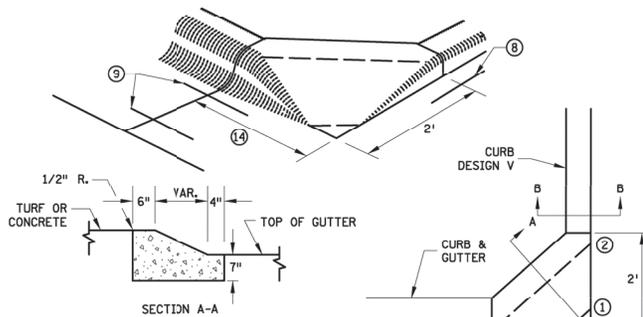


RADIAL DETECTABLE WARNING

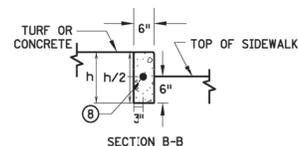


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

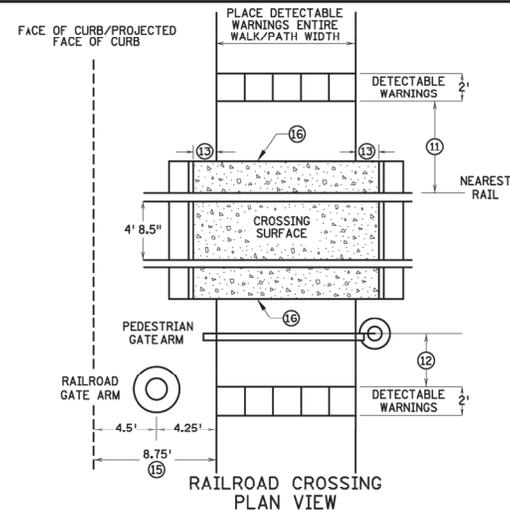


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH  
NOSE DETAIL  
(FOR RETURNED CURB  
SIDE TREATMENT)



RAILROAD CROSSING  
PLAN VIEW

NOTES:

- INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT, INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2" INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.
- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMP'S FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT, SEE INSET A ON SHEET 3 OF 6.
- ② FULL CURB HEIGHT.
- ③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ④ TYPICALLY USED FOR MEDIANS AND ISLANDS.
- ⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
- ⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS, AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
- ⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
- ⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
- ⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6" LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.
- ⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12" MINIMUM TO 15" MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12" MEASURED PERPENDICULAR TO THE NEAREST RAIL.
- ⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.
- ⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- ⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- ⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.
- ⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

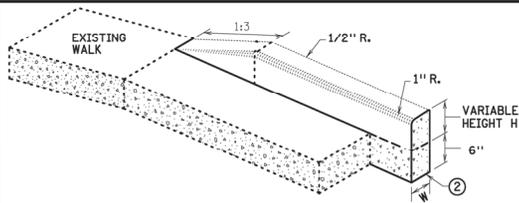
REVISION:  
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*Jeff J. Pel...*  
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OF  
TRANSPORTATION

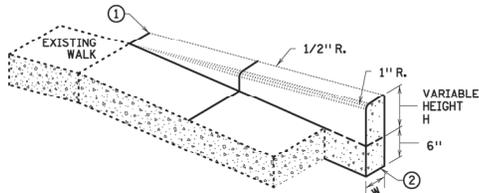
STANDARD PLAN 5-297.250 4 OF 6  
APPROVED: 11-04-2021  
REVISED:  
*Rom...*  
THOMAS STYBICKI  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

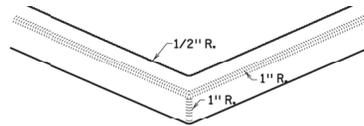
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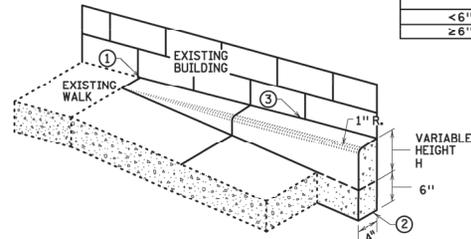
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

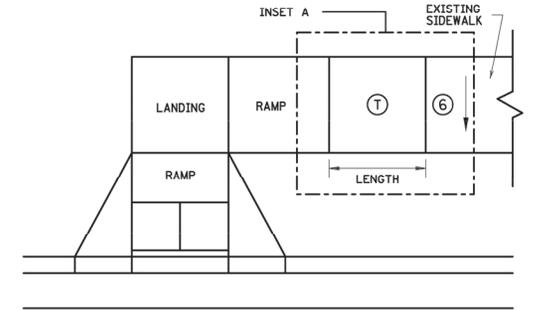


V CURB INTERSECTION

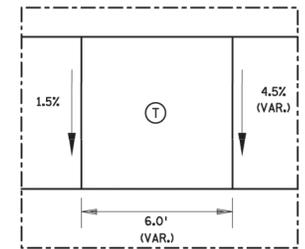


V CURB ADJACENT TO BUILDING  
OR BARRIER

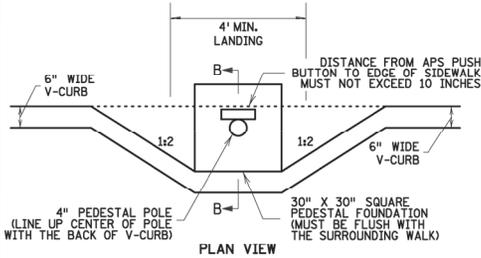
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"



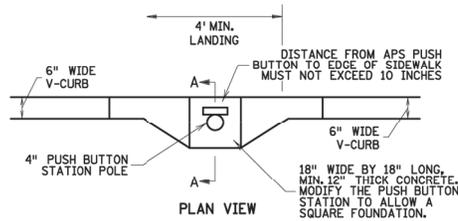
TRANSITION PANEL ④ ⑤



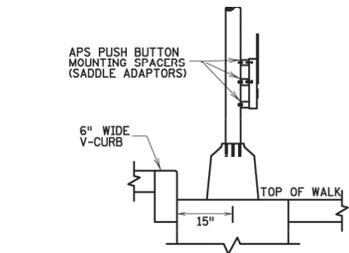
INSET A



PLAN VIEW

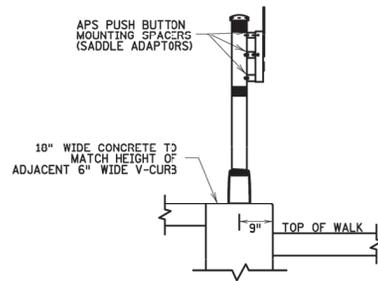


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
- ④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
- ⑤ TRANSITION PANEL(S) ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
- ⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

- ⑤ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- ↓ LANDING AREA - 4' X 4' MIN, (5' X 5' MIN, PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- ① TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1' LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

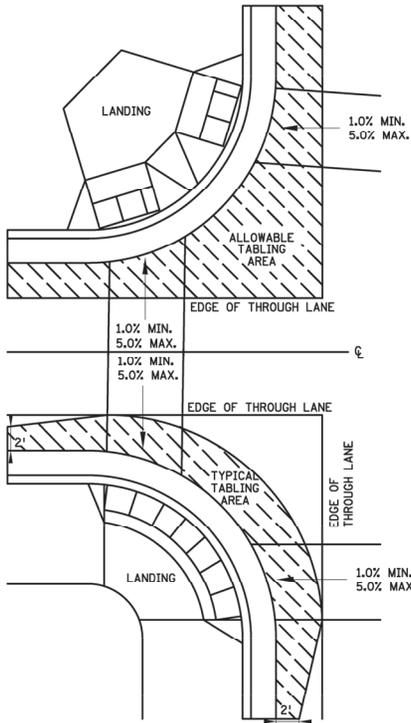
REVISIONS:  
APPROVED: 11-04-2021  
*Jeff J. Pel...*  
OPERATIONS DIVISION

**m**  
MINNESOTA  
DEPARTMENT  
OF  
TRANSPORTATION

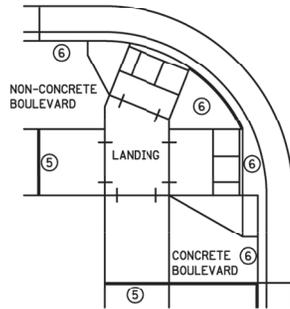
STANDARD PLAN 5-297.250 5 OF 6  
*Tom...*  
APPROVED: 11-04-2021  
REVISED:  
THOMAS TYRIBICKI  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

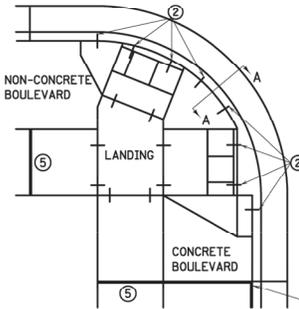
STATE PROJ. NO. (TH ) SHEET NO. 12 OF 18 SHEETS



CURB LINE AND ROAD CROSSING ADJUSTMENTS



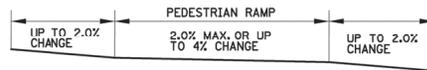
EXPANSION MATERIAL PLACEMENT FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



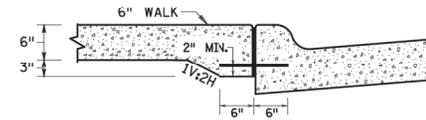
FLOW LINE PROFILE "TABLE" - FAN



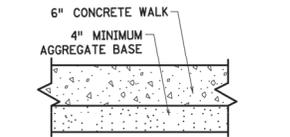
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



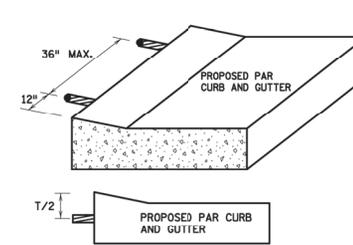
FLOW LINE PROFILE RAISE - FAN



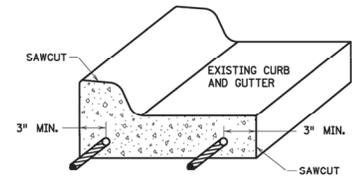
SECTION VIEW A-A THICKENED SECTION THROUGH CURB RAMP FLARES



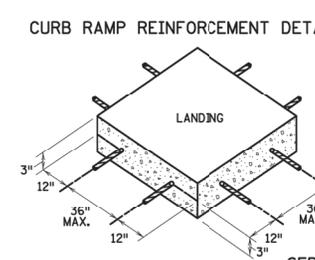
TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER



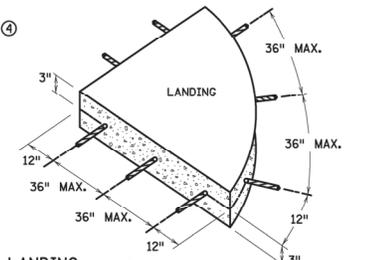
CURB RAMP REINFORCEMENT DETAILS 2 4



CURB AND GUTTER REINFORCEMENT 3



SEPARATE LANDING POUR REINFORCEMENT 1 2



GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2% WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE, TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
- 2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
- 3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
- 4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

- 1) TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- 2) DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.
- 3) DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.
- 4) THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.
- 5) CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.
- 6) USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

REVISION:  
APPROVED: 11-04-2021  
*Jeff J. Pel...*  
OPERATIONS DIVISION



STANDARD PLAN 5-297.250 6 OF 6  
APPROVED: 11-04-2021  
REVISOR:  
THOMAS STYBICKI  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

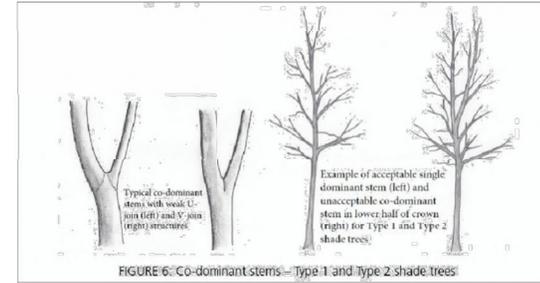
STATE PROJ. NO. (TH ) SHEET NO. 13 OF 18 SHEETS

**GENERAL NOTE:**

**ALL PLANT STOCK SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1) SPECIFICATIONS**

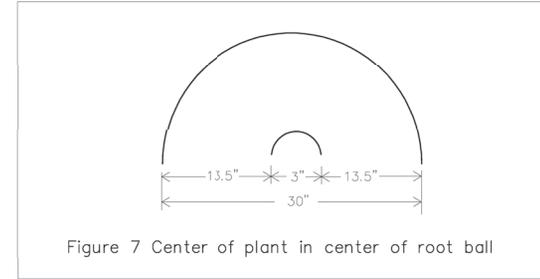
**BALLED & BURLAPPED AND CONTAINER GROWN STOCK**

- A4. Plant Stock Specifications
- All plant stock shall conform to American Standard for Nursery Stock.
  - A minimum of three structural roots reasonably distributed around the trunk shall be found in each plant. Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
  - The root crown must not be more than two inches below the soil line. The top two structural roots shall be no more than three inches below the soil line when measured four inches radial to the trunk. The top of the other structural root shall be no greater than five inches below the soil line when measured four inches radial to the trunk. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all circling roots above the structural roots across the top of the structural roots.
  - The root system shall be reasonably free of root defects including potentially stem-girdling roots above the root collar and main structural roots, vertical roots, and/or kinked roots from nursery production practices, including roots on the interior of the root ball.
  - Container grown plants, in addition to the above requirement, should comply with the following:
    - Container-grown plants may be permitted only when indicated on the drawing or specification.
    - Container-grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its potting medium together but not so long as to have developed roots that are matted or circling around the edge or interior of the main root mass. Plants shall have been root pruned at each change in container size.
    - Plants that fail to meet any of the above requirements shall be modified to correct deficiencies if approved by the engineer. Modification shall include the following:
      - shaving all circling on the exterior of the root mass deep enough so that all cut roots' ends are roughly radial to the trunk.
      - removal of all roots above the top of the main structural roots and trunk flare including any roots that are imprints from previous smaller containers.
      - the above modifications shall not be cause to alter the warranty provisions of this specification.
  - The center of the trunk(s) or stem(s) of the plant shall be in the center of the root ball. A tolerance of 10% of the diameter of the root ball is the maximum deviation allowable (see figure 7) For example: For a plant with a 30" root ball, the center of the plant at ground level shall be within a three-inch circle 13 1/2 inches from the outer edge of the ball.
  - Measurement:  
Depth of the root ball is measured from the top of the ball, which in all cases shall begin at the root flare (see Figure 8). Soil above the root flare, from being deeply planted nursery as a young plant, as a result of maintenance practices in the nursery, or added during harvest, shall not be included in ball depth measurement, and should be removed.
  - Plants shall be true to species and variety specified and nursery grown in accordance with good horticultural practices under climatic conditions similar to those in the locality of the project for at least 2 years. They shall have been freshly dug (during the most recent favorable harvest season).
  - Plants shall be trained in development and appearance as to be unquestionably superior in form, compactness and symmetry. They shall be sound, healthy, vigorous, well branched and densely foliated when in leaf, and free of disease and insect adults, eggs, pupae or larvae. They shall have healthy, well-developed root systems and shall be free from physical damage or other conditions that would prevent thriving growth.
  - Trees with multiple leaders, unless specified, will be rejected. (See figure 6) Trees with a damaged, cut, or crooked leader, included bark, abrasion of bark, sunscald, disfiguring knots, insect damage, mold, prematurely opened buds, or cuts of limbs over 3/4" inch (2 cm) diameter that are not completely callused are cause for rejection.
  - Balled and burlapped plants shall be dug with solid balls of standard size, the ball securely wrapped with non-synthetic, untreated, biodegradable burlap, and tightly bound with non-synthetic, biodegradable rope or twine. Alternatively they may be placed in wire basket lined non-synthetic, untreated, biodegradable burlap and tightly bound with non-synthetic, biodegradable rope or twine. Root collar shall be apparent at surface of ball. Bare root plants shall have a healthy, well branched root system characteristic of the species and with adequate spread.
  - Plants shall conform to the measurements specified, except that plants larger than those specified may be used if approved by the purchaser. Use of larger plants shall not increase the contract price nor allow the contractor to use smaller than specified material on other plants. If larger plants are approved, the root ball, root spread, or container shall be increased in proportion to the size of the plant.
  - Caliper measurements shall be taken on the trunk 6 inches (15 cm) above the root collar for trees up to 4 inches (10 cm) in caliper, and 12 inches (30 cm) above the root collar for trees over 4 inches (10 cm) in caliper. Height and spread dimensions specified refer to the main body of the plant and not from the branch tip to branch tip. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and no less than 50 percent of the plants shall be as large as the maximum size specified. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.



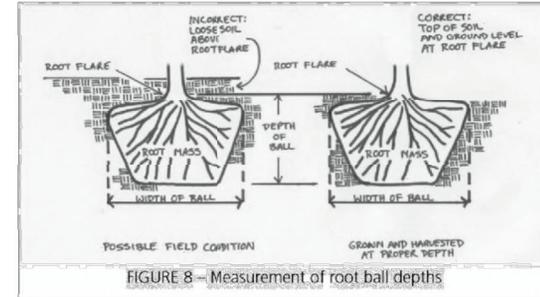
**FIGURE 6: Co-dominant stems—Type 1 and Type 2 shade trees**

**DOMINANT & CO-DOMINANT STEMS**



**Figure 7 Center of plant in center of root ball**

**CENTER OF ROOT BALL**



**FIGURE 8 — Measurement of root ball depths**

**ROOT BALL DEPTHS**



REVISED: 1-17

FILE NAME: G:\ENG\SPCS\5308

ENGINEERING DEPARTMENT

PLATE: 5308

NURSERY STOCK SPECIFICATIONS

NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
1	07-21-23	TRM	TRM	AMP	WATERSHED PERMIT SUBMITTAL

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.

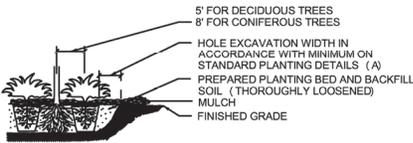
*Adam Pawell*  
ADAM PAWELL  
LIC. NO. 49990 DATE: 07-21-23

**HT** Engineering • Surveying  
**PO** Landscape Architecture  
HANSEN THORP PELLIN OLSON, INC.  
7510 Market Place Drive • Eden Prairie, MN 55344  
952-928-0700 • 952-928-7000 fax  
PROJECT NO. 23-013

OWNER NAME CITY OF CHANHASSEN

PLANTING DETAILS  
TRAIL/WALK IMPROVEMENTS  
CHANHASSEN, MN

SHEET 14 OF 18



NOTES:  
1.\*\*BARE ROOT PERENNIALS MUST BE INSTALLED IN THE SPRING BY JUNE 1ST, IF PLANTING IN FALL, FOLLOW FALL DECIDUOUS PLANTING DATES.  
2.\*\*ACTUAL DATES MAY CHANGE DEPENDING UPON SEASONAL CONDITIONS, AS DETERMINED BY THE ENGINEER.  
3.\*\*FALL PLANTING MAY NOT BE RECOMMENDED OR ALLOWED. SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS. THE FOLLOWING BARE ROOT PLANTS ARE NOT RECOMMENDED FOR FALL INSTALLATION: HAWTHORN, RUSSIAN OLIVE, DOGWOOD, POPLAR, HACKBERRY, LINDEN, IRONWOOD, HONEYLOCUST, BIRCH, MOUNTAIN ASH, MAPLE, WILLOW, CRABAPPLE, PLUM/CHERRY, OAKS, AND SUMAC.

KEY	SPRING				FALL	
	PERENNIALS	CONIFEROUS	DECIDUOUS	SEEDLINGS	DECIDUOUS	CONIFEROUS
1	MAY 1 TO JUNE 15	APRIL 21 TO JUNE 1	APRIL 21 TO JUNE 1	APRIL 21 TO JUNE 1	OCT. 1 TO NOV. 1	AUG. 25 TO SEPT. 15
2	MAY 1 TO JUNE 15	APRIL 7 TO MAY 17	APRIL 7 TO JUNE 1	APRIL 7 TO MAY 17	OCT. 10 TO NOV. 15	AUG. 25 TO SEPT. 15

OPTIMUM PLANTING DATE ZONES IN MINNESOTA



1.\*\*EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF ROOT MASS 1"-3" HIGHER THAN FINISHED GRADE.  
2.\*\*AUGER 8" DIAMETER HOLES ENTIRELY THROUGH IMPERVIOUS OR POORLY DRAINED HARD PAN SOIL LAYER TO ADEQUATELY DRAIN SUBSOIL.  
3.\*\*THOROUGHLY BACKFILL AUGER HOLES WITH A UNIFORM INCORPORATED MIXTURE OF 50% SAND AND 50% INPLACE SOIL.  
4.\*\*COMPLETE PLANTING ACCORDING TO PLANTING DETAILS ( SHEET A ) .

NOTE:  
THE NEED FOR USING ALTERNATIVE PLANTING DETAILS AND WHICH TYPE TO USE SHALL BE DETERMINED BY THE CONTRACTOR AND SUBJECT TO APPROVAL BY THE ENGINEER.

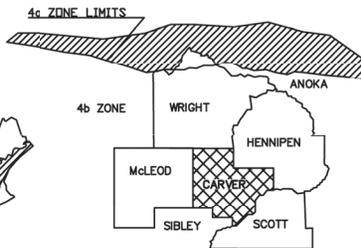


1.\*\*EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF THE ROOT MASS 1"-3" HIGHER THAN FINISHED GRADE.  
2.\*\*INSTALL 4" MINIMUM DIAMETER DRAIN TILE DAYLIGHTING AT A LOWER GRADE, AS APPROVED BY THE ENGINEER.  
3.\*\*COMPLETE PLANTING ACCORDING TO PLANTING DETAILS ( SHEET A ) .

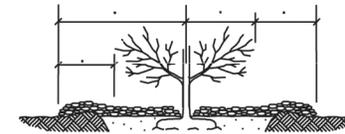


1.\*\*EXCAVATE HOLE OR BED 1/4 THE DEPTH OF THE ROOT MASS.  
2.\*\*SET ROOT MASS IN HOLE.  
3.\*\*CONSTRUCT BERM WITH SANDY LOAM TOPSOIL. EXTEND THE BERM BASE TO A WIDTH OF 3 TIMES THE BERM HEIGHT.  
4.\*\*COMPLETE PLANTING ACCORDING TO PLANTING DETAILS ( SHEET A ) .

ALTERNATIVE PLANTING DETAILS FOR POORLY DRAINED SOIL



PLANT HARDINESS IN CHANHASSEN IS ZONE 4b  
AVERAGE ANNUAL EXTREME MINIMUM TEMPERATURE RANGE FOR ZONE 4b IS -25 TO -20 DEGREES (F)



SUBSIDING OR DETERIORATING MULCH SHALL BE ACCEPTABLE THROUGHOUT THE CONTRACT PERIOD PROVIDED THE MULCH DEPTH IS MAINTAINED AT A MINIMUM 3" DEPTH AT ALL TIMES AND UPON FINAL ACCEPTANCE. REPLACEMENT MULCH SHALL BE REQUIRED WHEN THE CONTRACTOR'S OPERATIONS HAVE CONTAMINATED THE MULCH WITH SOIL.

NOTE:  
1.\*\*REMOVE MULCH PLACED TO A DEPTH GREATER THAN THAT SPECIFIED WHEN DIRECTED BY THE ENGINEER.  
2.\*\*PULL MULCH BACK NO LESS THAN 3" AND NO MORE THAN 6" FROM THE TRUNK

TYPE OF PLANT	W CENTER OF PLANT TO MULCH LINE	X EDGE OF BRANCHING TO MULCH LINE	Y DEPTH OF MULCH	Z DEPTH OF MULCH
CONIFEROUS TREES	VARIES	3' MIN.	4"- 6"	4"- 6"
DECIDUOUS TREES	3' MIN.	N/A	4"- 6"	4"- 6"
CONIFEROUS SHRUBS	VARIES	3' MIN.	3"- 4"	4"- 6"
DECIDUOUS SHRUBS	3' MIN.	N/A	4"- 6"	4"- 6"
VINES	2' MIN.	N/A	4"- 6"	4"- 6"
PERENNIALS	VARIES	2' MIN.	2"- 4"	2"- 4"
MACHINE-TRANSPLANTED TREES	12" BEYOND EDGE OF HOLE		4"- 6"	4"- 6"

MULCH PLACEMENT DETAIL

ALL PLANT STOCK SHALL BE DEEMED ACCEPTABLE FOR HARDINESS:

1.\*\*IF IT IS HARDY TO THE MINNESOTA ZONE 4b WHERE THE PROJECT SITE IS LOCATED AND:

A.\*\*PLANT STOCK CAN BE DOCUMENTED AS CONTINUOUSLY GROWN FOR AT LEAST THE LAST TWO YEARS WITHIN THE ACCEPTABLE LIMITS ZONES 3,4 OR 5 SHOWN ON THE ACCEPTABLE PLANT STOCK GROWING RANGE ABOVE.

OR

B.\*\*PLANT STOCK, IF GROWN OUTSIDE THE ACCEPTABLE GROWING RANGE LIMITS, CAN BE DOCUMENTED AS HAVING THE SEED SOURCE AND ROOT AND GRAFT STOCK ORIGINATING FROM WITHIN THE ACCEPTABLE GROWING RANGE LIMITS.

ACCEPTABLE PLANT STOCK GROWING RANGE LIMITS SOURCE: U.S.D.A. PLANT HARDINESS ZONE MAP



REVISED:  
3-14

FILE NAME:  
G:\ENG\SPES\5310

ENGINEERING  
DEPARTMENT

PLATE:  
5310

PLANTING DETAILS FOR  
STEEP SLOPES/MASS BED PLANTINGS

NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
1	07-21-23	TRM	TRM	AMP	WATERSHED PERMIT SUBMITTAL

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.

*Adam Pawelk*  
ADAM PAWELK  
LIC. NO. 49990 DATE: 07-21-23

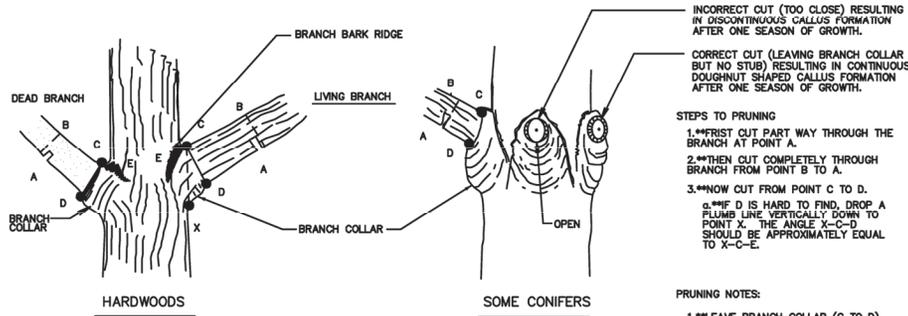
**HT** Engineering • Surveying  
**PO** Landscape Architecture  
HANSEN THORP PELLIN OLSON, INC.  
7510 Market Place Drive • Eden Prairie, MN 55344  
952-929-0709 • 952-929-7000 fax  
PROJECT NO. 23-013

OWNER NAME CITY OF CHANHASSEN

PLANTING DETAILS  
TRAIL/WALK IMPROVEMENTS  
CHANHASSEN, MN

SHEET  
16  
OF  
18



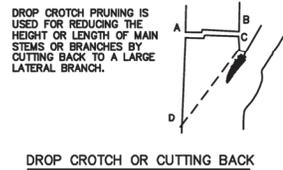


INCORRECT CUT (TOO CLOSE) RESULTING IN DISCONTINUOUS CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

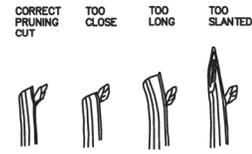
CORRECT CUT (LEAVING BRANCH COLLAR BUT NO STUB) RESULTING IN CONTINUOUS DOUGHNUT SHAPED CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

- STEPS TO PRUNING
- 1.\*\*PRIST CUT PART WAY THROUGH THE BRANCH AT POINT A.
  - 2.\*\*THEN CUT COMPLETELY THROUGH BRANCH FROM POINT B TO A.
  - 3.\*\*NOW CUT FROM POINT C TO D.
- o.\*\*IF D IS HARD TO FIND, DROP A PLUMB LINE VERTICALLY DOWN TO POINT X. THE ANGLE X-C-D SHOULD BE APPROXIMATELY EQUAL TO X-C-E.

- PRUNING NOTES:
- 1.\*\*LEAVE BRANCH COLLAR (C TO D)
  - 2.\*\*DO NOT FLUSH CUT (C TO X)
  - 3.\*\*DO NOT LEAVE STUBS (B TO A)
  - 4.\*\*BEST TIME TO PRUNE IS LATE DORMANT SEASON OR EARLY SPRING.
  - 5.\*\*AVOID PRUNING OAKS IN APRIL, MAY, JUNE OR JULY.
  - 6.\*\*IMMEDIATELY PAINT OAK WOUNDS MADE IN APRIL, MAY, JUNE OR JULY WITH LATEX PAINT OR SHELLAC.



DROP CROTCH OR CUTTING BACK



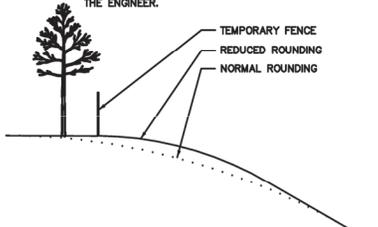
PRUNING SMALL BRANCHES

BRANCHES SMALLER THEN 2" IN DIAMETER SHOULD BE CUT JUST BEYOND A LATERAL BUD OR ANOTHER SMALL LATERAL BRANCH. THE IDEAL CUT SHOULD BE SHARP, CLEAN, AND MADE ON A SLIGHT ANGLE.

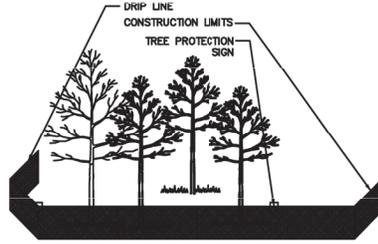
PRUNING DETAILS (Shigo Method)

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

- NOTES:
- 1.\*\*PLACE THE TEMPORARY FENCE.
  - 2.\*\*REDUCE SLOPE ROUNDING WHERE ROOT ZONES WILL BE DISTURBED BY NORMAL SLOPE ROUNDING, AS APPROVED BY THE ENGINEER.
  - 3.\*\*VARY BACK SLOPE STEEPNESS TO AVOID TREE LOSS OR UNNECESSARY ROOT DAMAGE, AS APPROVED BY THE ENGINEER.

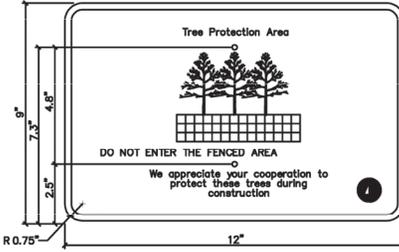


SLOPE ROUNDING DETAIL



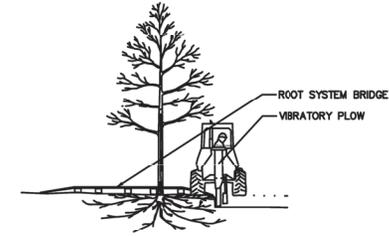
TEMPORARY PROTECTION FENCE PLACEMENT DETAIL

FURNISH AND INSTALL TEMPORARY FENCE AT THE TREE'S DRIFLINE OR CONSTRUCTION LIMITS AS SPECIFIED, PRIOR TO ANY CONSTRUCTION. WHEN POSSIBLE PLACE FENCE 25 FEET BEYOND THE DRIP LINE. PLACE PROTECTION SIGNS ALONG FENCE AT 20' INTERVALS.

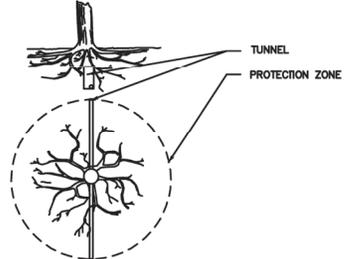


TREE PROTECTION SIGN DETAIL

FABRICATE 12" X 9" X 3/8" SIGN WITH 0.75" RADIUS CORNERS. SIGN SHALL BE WHITE WITH BLACK LETTERING. ATTACH SIGN TO POST USING 1" LENGTH WOOD SCREWS, PLACED AT 2.5" AND 7.3" RESPECTIVELY FROM THE BOTTOM EDGE OF THE SIGN.



ROOT SYSTEM BRIDGE AND VIBRATORY PLOW



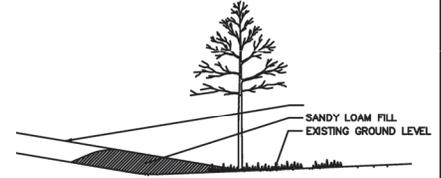
UTILITY INSTALLATION TUNNEL

ROOT PROTECTION AND TRENCHING DETAILS

- NOTES:
- 1.\*\*REDUCE COMPACTION ON ROOT SYSTEMS WHERE IT OCCURS BY DRILLING 50 mm (2") DIAM. HOLES IN THE SOIL TO A DEPTH OF 450 mm (18"). BEGIN 3' FROM THE TREE TRUNK AND CONTINUE AT 2' INTERVALS IN CONCENTRIC RINGS OUT TO THE PROTECTION ZONE.
  - 2.\*\*WATERING OF ROOT DAMAGED TREES WILL BE REQUIRED TO MAINTAIN ADEQUATE BUT NOT EXCESSIVE SOIL MOISTURE TO A DEPTH OF 18" WITHIN THE UNDISTURBED PORTION OF THE IMPACTED TREE DRIFLINE.
  - 3.\*\*A 6 INCH LAYER OF WOODCHIP MULCH PLACED OVER A TYPE III (5733) GEOTEXTILE FABRIC MAY BE USED IN LIEU OF THE ROOT SYSTEM BRIDGE.
  - 4.\*\*WHEN DESIGNATED IN THE PLAN OR WHEN DIRECTED BY THE ENGINEER, ALL TREE ROOTS AT THE CONSTRUCTION LIMITS SHALL BE CUT CLEANLY TO THE MAXIMUM DEPTH NECESSARY FOR CONSTRUCTION) WITH A VIBRATORY PLOW OR OTHER APPROVED ROOT CUTTER PRIOR TO ANY EXCAVATION. ROOT ENDS EXPOSED BY EXCAVATION ACTIVITIES SHALL BE IMMEDIATELY COVERED WITH A 6" LAYER OF ADJACENT SOIL BACKFILL, REGRADE, OR INSTALL RETAINING WALL, AS DESIGNATED IN THE PLAN OR WHEN DIRECTED BY THE ENGINEER.
  - 5.\*\*IF CONSTRUCTION VEHICLES MUST PASS OVER ROOT ZONES, CONSTRUCT ROOT SYSTEM BRIDGES WITH STEEL PLATE SUPPORTED ON WOOD TIMBERS PLACED RADIALY TO THE TREE TRUNK.

TREE PROTECTION ZONE	
TREE DIAMETER AT 4.5' ABOVE GROUND	MINIMUM DISTANCE FROM FACE OF TREE TRUNK
0' - 2'	2'
2' - 4'	4'
4' - 6'	6'
6' - 10'	10'
10' - 14'	10'
14' - 18'	12'
18' +	15'

\*\*WHEN UTILITY INSTALLATIONS MUST OCCUR WITHIN THE TREE PROTECTION ZONE, AS DEFINED IN THE ABOVE CHART, THE CONTRACTOR SHALL BORE (TUNNEL) UNDER TREE ROOTS THAT ARE TO BE PRESERVED. THE CONTRACTOR SHALL BORE AT A MINIMUM DEPTH OF 24" BELOW THE GROUND SURFACE WITHIN THIS ZONE.



SANDY LOAM FILL DETAIL

ANY FILL REQUIRED WITHIN THE DRIP LINE OF TREES SHALL BE AN UNCOMPACTED (WITH A COARSE SAND COMPONENT) SANDY LOAM TOPSOIL. EXCESSIVE FILL MAY REQUIRE INSTALLING PERFORATED PIPE WITH AT LEAST ONE DAYLIGHTED END OPENING AS AN AERATION SYSTEM.



REVISED: 2-10

FILE NAME: G:\ENG\SPCS\5312

ENGINEERING DEPARTMENT

PLATE: 5312

VEGETATION PROTECTION DETAIL

NO.	DATE	DRAWN	DESIGN	CHECKED	ISSUES / REVISIONS
1	07-21-23	TRM	TRM	AMP	WATERSHED PERMIT SUBMITTAL

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.

*Adam Pawelk*  
ADAM PAWELEK  
LIC. NO. 49990 DATE: 07-21-23

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PROJECT NO. 23-013

OWNER NAME CITY OF CHANHASSEN

PLANTING DETAILS  
TRAIL/WALK IMPROVEMENTS  
CHANHASSEN, MN

SHEET 18 OF 18

