

Sample Plan

DRAINAGE PLAN SHEET ----- NARRATIVE

References:

- Design Scene: Chapter 12 - Drainage
- Road Design Manual: Chapter 4 (Clear Zone), 8-1 to 8-4, 8-6
- Drainage Manual
- MnDOT Policy Manual: Chapter 6 - Policy for Procedure for Cooperative Construction Projects with Local Units of Government
- Technical Memorandum: No. 12-01-B-01 Use of Plastic Pipe for Storm Sewer and Culverts on Trunk Highways
No. 14-04-B-02 Requirements for the Use of Metal Box Culverts
No. 15-03-TS-01 Design Guidelines for Locating Wet Ponds with Permanent Water Depths Along Freeways and High Speed Highways
- Standard Plans: 5-297.430 Subsurface Drains
5-297.431 Subsurface Drains
5-297.432 Subsurface Drains
5-297.433 Subsurface Drains - Outlet Pipes For Edge and Subcut Drains
- Miscellaneous: <http://lhub.metro/design/coordination.html> Design/WRE Responsibilities for Plan Preparation Activities

General Information:

Proposed pond names are assigned by WRE.

Consider catch basins near corners of bridges at curb ends to prevent erosion of abutment embankments. The outlets shall be drained to the toe of the slope.

Show creek realignments.

The necessary permits (DNR, CORPS, MCES, MPCA, etc.) will be applied for by the Water Resources Unit after coordinating with Design. Water Resources will also coordinate the design with the applicable Watershed Districts. Design will initiate the NPDES process. Water Resources will complete and submit it to Central Office Construction. Construction will submit the Notice of Intent to the MPCA.

Consider placing trunk storm sewers outside of the roadbed, to minimize roadbed disruption when pipes deteriorate and need replacement.

All permanent drainage structures, ponds and basins should be within R/W limits or permanent drainage easements and should be accessible to Maintenance.

Temporary drainage should be incorporated into the staged construction plan.

Water bodies should be delineated on drainage plan sheets (lakes, wetlands, etc.). If areas are environmentally sensitive, note as such and include wetland type. Information can be obtained from Metro District's Wetlands Project Specialist.

Inplace drainage patterns should be maintained where possible.

Erosion control and superelevations may be shown on the drainage plan sheet rather than on a separate sheet if the plan sheet will not appear too cluttered. If so, the sheet should be titled as such; and refer to the associated narratives and checklists when preparing this sheet.

Consider using input gutters in median areas to minimize sheet flow and icing and output gutters in medians to minimize the number of structures. Consult with the Water Resources Engineering Unit.

On smaller projects that do not include roadway profiles, ditch grades may be shown on drainage plan sheets.

Check clear zone to determine need for safety aprons and grates. Use flared end aprons when pipe end is outside of the clear zone. Use safety apron and/or grate when pipe is within the clear zone. Provide 1:10 slopes for median pipes parallel to roadway and include the detail in the plan. All pipe sizes in median require safety aprons and grates.

General Information Cont.:

When placing a catch basin along the inside ring of a roundabout, try to place it on the South or Southwest side where it will be more likely to catch any meltwater in the winter months and less likely to remain covered in snow or ice.

To prevent birdbaths and ensure proper drainage of the gutter along the outside edge of a roundabout, add a note to the construction plan to slope the gutter along the end of the splitter islands at the same cross slope as the adjacent roundabout pavement.

Coordinate with the Water Resources Engineering Unit.

When providing materials recommended edge and/or subcut drains, review 2502 Special Provisions to determine correct pay items. Edge drains are usually paid for as perforated PE pipe. Subcut drains are usually paid for as perforated TP pipe. Outlet pipe are paid for as TP pipe. If connecting pipe drains to drainage structures, make the connection incidental.

Make it clear in the Plan if connects are incidental or paid for. You cannot have both in one plan.

The Designer needs to coordinate with Water Resources for signing large infiltration basins. Place the cell X3-6a, found in the Sign05.cel library, at the appropriate locations on the plan, and pay under item 2564.602 INFILTRATION AREA MARKER X3-3A by the EACH. The Designer needs to coordinate with the Signing Engineer to ensure the special provision is included in the Division ST.

Sample Plan

DRAINAGE PLAN SHEET ----- CHECKLIST

- _____ 1. Check Drainage (culverts, pipe sewers, and flumes) Against:
 - a. Estimate Sheet
 - b. Plan Sheets
 - c. Profile Sheets
 - d. Cross-Sections
 - e. Standard Plates
 - f. Tabulations
- _____ 2. Check staging plans to see if storm sewer layout will work. (Enough R/W, Is jacking required, etc...). Are inlet and outlet locations and elevations consistent with previous or future stages.
- _____ 3. High and low point's station and elevation should be on drainage plan sheet
- _____ 4. Direction arrows for flow in ditches, culverts, and storm sewer
- _____ 5. Berms or ditch blocks provided where appropriate (elev., detail, location)
- _____ 6. Ponds should be designated on drainage plan (NWL, HWL(100YR), and pond bottom elevations)
- _____ 7. NPDES permit requirements met
- _____ 8. Areas of Environmentally Sensitivity Identified in Plan
- _____ 9. Drawn by: and Checked by: Initials and Engineer's signature
- _____ 10. See Erosion Control checklist, if applicable
- _____ 11. See Superelevation checklist, if applicable
- _____ 12. Verify information in tabs and profiles match
- _____ 13. Show class of pipe, other than Class II on profile
- _____ 14. Check for safety aprons and grates.
- _____ 15. Trash guards require a special detail in the Plan.

DRAINAGE PLAN NARRATIVE AND CHECKLIST

REVISION DATE 12/28/16
PLOTTED/REVISED: 26-JAN-2017 08:53

DISTRICT #: METRO
IPLOT NAME: spdrainpln
FILENAME: Projects\DM_ROMS\Non_Project\Design\SamplePlan\Eng\Ish\drainpln.dgn

LEGEND

- CONSTRUCTION - THIS CONTRACT
- XXXX STRUCTURE NUMBER
- CATCH BASIN
- INPLACE CATCH BASIN
- MANHOLE
- APRON
- INPLACE APRON
- STORM SEWER
- INPLACE STORM SEWER
- PORTABLE CULVERT
- INPLACE CULVERT
- MS SILT FENCE
- STORM DRAIN INLET PROTECTION
- RIPRAP CLASS II
- SOD APRON INLET OR OUTLET
- ORSP STAND PIPE
- DITCH BLOCK
- SURFACE FLOW DIRECTION
- CULVERT END CONTROLS
- SUPERELEVATION FT/FT

FOR DRAINAGE PROFILES AND TABULATION, SEE SHEET NO. 185,186, 192 & 191A.

DRAINAGE NOTES

FOR SPECIAL DITCH GRADES, SEE PROFILE SHEETS NO. 236 TO 244 OR CROSS SECTIONS.

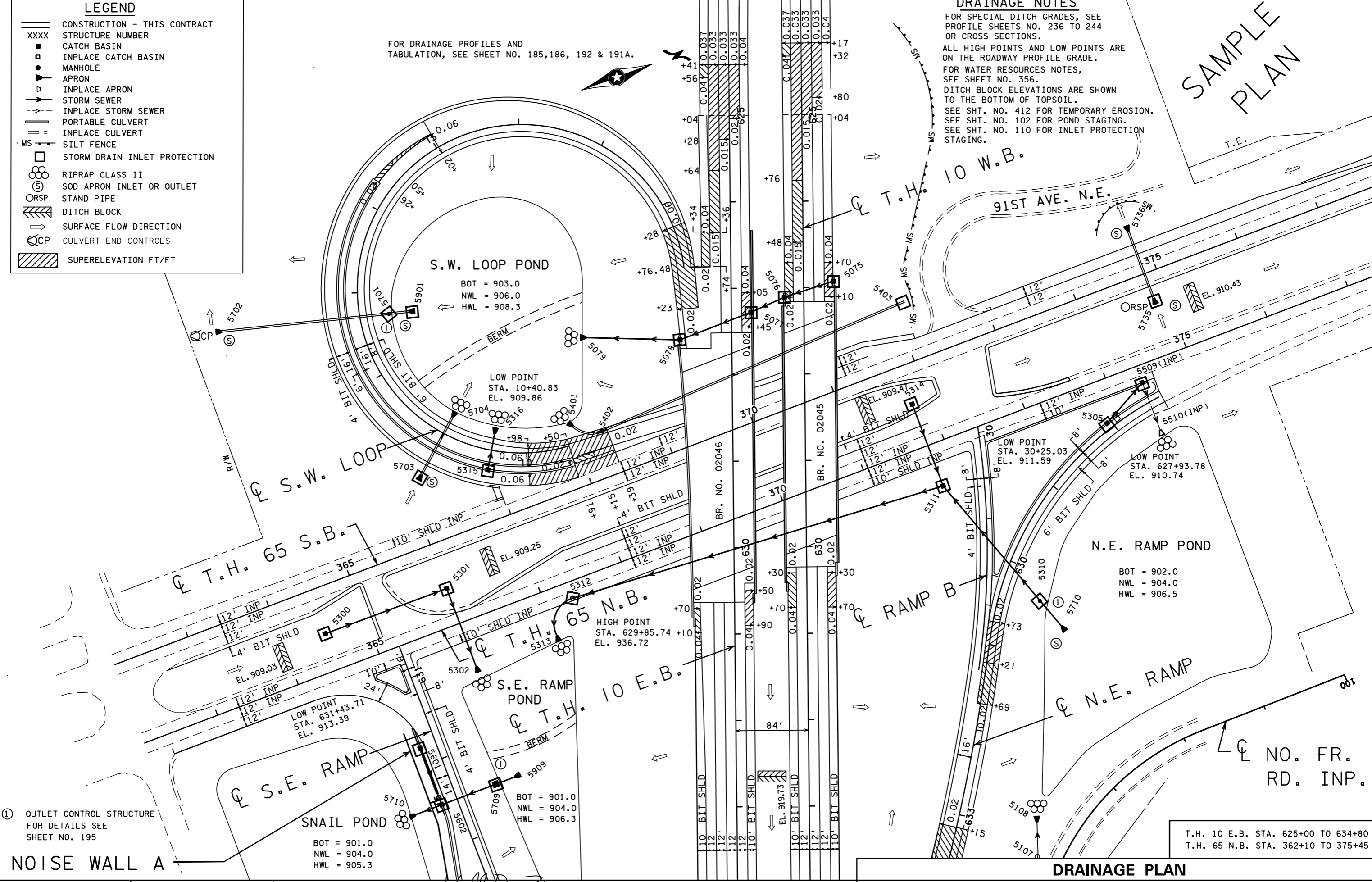
ALL HIGH POINTS AND LOW POINTS ARE ON THE ROADWAY PROFILE GRADE.

FOR WATER RESOURCES NOTES, SEE SHEET NO. 356.

DITCH BLOCK ELEVATIONS ARE SHOWN TO THE BOTTOM OF TOPSOIL.

SEE SHT. NO. 412 FOR TEMPORARY EROSION. SEE SHT. NO. 102 FOR POND STAGING. SEE SHT. NO. 110 FOR INLET PROTECTION STAGING.

SAMPLE PLAN



OUTLET CONTROL STRUCTURE FOR DETAILS SEE SHEET NO. 195

NOISE WALL A

SNAIL POND
BOT = 901.0
NWL = 904.0
HWL = 905.3

WILL D. ZIRE
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 00000 DATE 02/01/10

STATE PROJ. NO. 0000-00 (T.H. 00) SHEET NO. 68 OF 84 SHEETS

DRAINAGE PLAN

T.H. 10 E.B. STA. 625+00 TO 634+80
T.H. 65 N.B. STA. 362+10 TO 375+45