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Chapter 2 – 2018 SPEC BOOK

The 2018 Spec Book is expected to be published (electronically) by the end of August 2017.

The effective date for the 2018 Spec Book is the January 26, 2018 letting.

All project documents submitted for the January 26, 2018 letting, or later lettings, must be in accordance with the 2018 Spec Book. If your project is let on or after January 26, 2018, it must use the 2018 Spec Book. If you think your project should be granted an exemption from this requirement, submit a written request to the State Design Engineer (with justification) as soon as possible.

As part of the 2018 Spec Book the Bid item numbering is changing to be more consistent with the special provision numbering convention. This will allow for a higher degree of quality, in addition to making our estimating and specification updating more consistent moving forward.

Therefore, make sure that all plans on or after January 26, 2018 use this new numbering convention. The .6XX numbers will still require a special provision write-up for them. The following is a list of what the new trail numbers will be for ALL items.

Special Provision Numbering	Standard Specification Numbering	Plan Unit Description
.601	.501	LUMP SUM
.602	.502	EACH
.603	.503	LIN FT
.604	.504	SQ YD
.605	.505	ACRE
.606	.506	GALLON
.607	.507	CU YD
.608	.508	POUND
.609	.509	TON
.610	.510	HOUR
.611	.511	DAY
.612	.512	WEEK
.613	.513	UNIT DAY
.614	.514	STRUCTURE

Special Provision Numbering	Standard Specification Numbering	Plan Unit Description
.615	.515	ASSEMBLY
.616	.516	SYSTEM
.617	.517	SQ FT/DAY
.618	.518	SQ FT
.619	.519	ROAD STA
.620	.520	YARD
.621	.521	DOLLAR
.622	.522	MBM
.623	.523	M GALLON
.624	.524	TREE
.625	.525	SHRUB
.626	.526	VINE
.627	.527	PLANT
.628	.528	SIG SYS

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Chapter 2 – FOG SEAL

When using item 2355 BITUMINOUS MATERIAL FOR FOG SEAL. It should include a note that gives the dilution and mix rate. The note would read something like...

Quantity based on diluted mixture at a 1:1 rate applied at 0.08 gallons per square yard.

Chapter 4 – 2106 EARTHWORK PAY ITEMS (Correction)

Paragraph 2 is deleted....

~~Also if this item includes a note stating that the 6" of bituminous pavement removal is paid for as excavation common it cannot include any quantities. However, this quantity needs to be supplied to the central office estimating unit.~~

Chapter 12 – PLASTIC PIPE OPTION FOR STORM SEWER AND CULVERTS (Revised)

As a result of the recent tech memo No. 17-05-B-02 this section need to be revised as follows....

Mn/DOT has agreed to include acceptable pipe materials within its construction plans. It has been determined that plastic pipe should be used more uniformly statewide for storm sewer and culverts if the plastic pipe design criteria are met. This is being provided in response to industry concern that plastic pipe, although an approved material was not being included as a bid alternate. Designers may continue to specify a particular product to be used when professional engineering judgment determines that circumstances warrant. When this is the case the designer should keep written documentation in the project file on why the option was not used.

Plastic pipe should be used in accordance with Technical memorandum No. ~~12-01-B-01~~ 17-05-B-02.

Storm Sewer

Storm Sewer (2503 items) MUST give the plastic pipe option for pipes less than or equal to 48". If not they must have a good reason document in the project file as why the option was not given. Not wanting an option is not a valid reason for not having it.

In order to make it clear which pipes shall have options, it is recommended that for each reach of pipe that the options should be noted in the drainage tabulation. On the Statement of Estimated Quantities the listed pay item will be reinforced concrete pipe. A note shall be provided on each appropriate pay item noting that: **Plastic pipe may be used as an option.**

For storm sewer systems where some of the sewer pipe qualifies for the plastic pipe option and the rest of the sewer is concrete, the pay item should have a note on the estimate sheet showing how much pipe may be plastic.

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Example:

2503.511 24" RC PIPE SEWER CLASS III (1) LIN FT 500

(1) Plastic pipe may be used as an option for 200 lin. ft.. See tabulations for locations.

Make sure the locations are shown in the drainage table.

Centerline Culvert

Plastic pipes may be used for centerline culverts as long as they meet the following requirements...

The maximum allowable diameter is 48" for use under unpaved roads or when ADT is less than ~~3000~~ 5000.

Centerline culverts shall have silt-tight joints unless designated as requiring watertight joints. A note should be in the plan when a watertight joint is required.

In order to make it clear which pipes shall have options, it is recommended that for each reach of pipe that the options should be noted in the drainage tabulation. On the Statement of Estimated Quantities the listed pay item will be reinforced concrete pipe. A note shall be provided on each appropriate pay item noting that: Plastic pipe may be used as an option.

Side Culvert

As with the storm sewer it is recommended that the tabulation for side culverts note those that will have options.

When giving the plastic pipe option they must use the generic pay items...

- 2501.602 X" SAFETY APRON by the EACH with the note...Apron material shall be the same as pipe material except that the apron for CP pipe shall be CS.
- 2501.602 X" PIPE APRON by the EACH with the note... Apron material shall be the same as pipe material except that the apron for CP and CS pipe shall be GS.
- 2501.603 X" PIPE CULVERT by the LIN FT with the note...CS, CP, RC may be used as acceptable pipe options. CS was used to determine the pipe lengths.

Other

Plastic pipe is dependent on soil interaction for support. Adequate compaction must be attainable for the pipe to perform satisfactorily. Areas of high groundwater or unusual soil conditions may not be suitable if compaction is not certain. Follow the design criteria in the Technical Memorandum which provide guidance on acceptable pipe sizes, cover requirements, allowable ADT for centerline culvert, and other considerations. Designers need to apply engineering judgment in such situations and limit the types of pipe materials allowed if site conditions may result in an unsuccessful installation.

Chapter 14 – DOUBLE NESTING GUARDRAIL (Revised/Replaced)

This section is replaced by....

Chapter 14 – **STIFFENED GUARDRAIL**...see below

Chapter 14 – BULLNOSE LENGTH

There has been confusion on how to calculate the length of the bullnose. Standard plan sheet 5-297.611 (1 of 3 and 3 of 3) shows the “pay limit”. For design purposes we typically use approximately 100 linear feet for each nose. In other words, the 100 linear feet includes both sides, 47’ + 47’ for 1 of 3 for narrow median and 48’ + 48’ for 3 of 3 for wide median and the bend of the bullnose as shown.

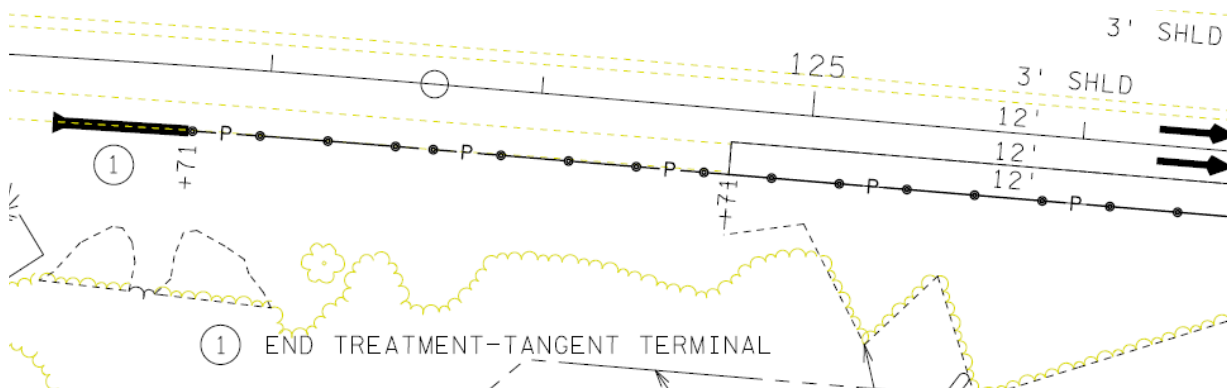
Chapter 14 – TYPE 31 GUARDRAIL (Revised)

There has been some confusion regarding various aspects of design/use of the TYPE 31 Guardrail. The following will be added (+)/revised (►) in the Chapter 14 – TYPE 31 GUARDRAIL section of the Design Scene. Hopefully the following will help to alleviate some of that confusion.

+ The Standard Plan 5-297.601 should be used for both the MSKT and SOFTSTOP.

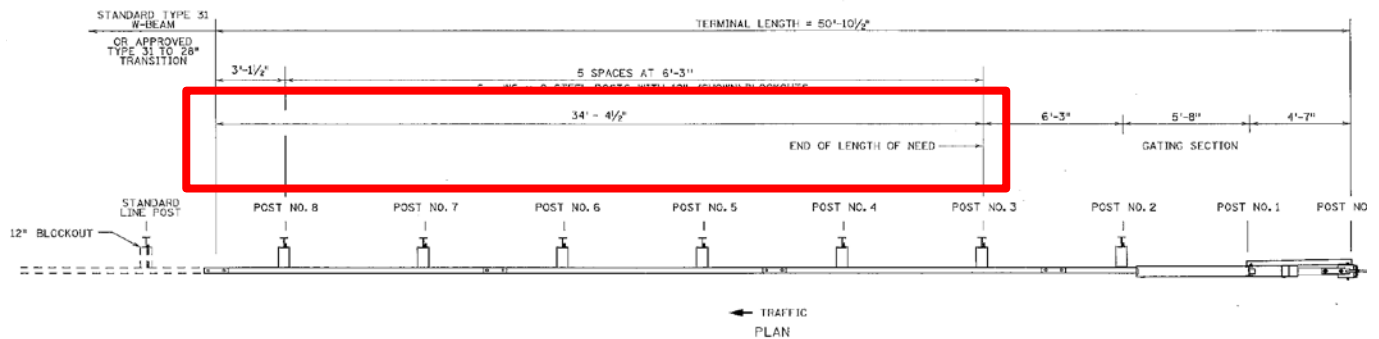
► **Proposed solution for tangent terminals of different lengths (Stationing of guardrail length).** There has been confusion on how to show this in the plan as the two end treatments are of different lengths. In the past we would show the stationing to the end of the end treatment but that is not the case for the Type 31 guardrail with tangent terminals.

In the plan view show a + station where the Type 31 guardrail ends and the end treatment begins. This may not necessarily be the length of need as a portion of the length of need is covered in the end treatment pay item (approximately 34’- 4.5’’). It is desirable to show the end treatment with a different icon. For example below the TYPE 31 ends at 122+71 which is where the end treatment begins.



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The end treatment will include approximately 34'-4.5" of the length of need (see example below).



► Connecting to other barrier systems

~~Standards have not been established yet for connecting Type 31 to bullnose installations. The current design with 8338 guardrail (Standard Plate 8338) should be used.~~ When connecting the bullnose to the TYPE 31 guardrail use the thrie beam bullnose transition to Traffic Barrier Type 31 design detail (BULLNOSE TO TYPE 31). The 6'3" transition section (between posts 10 and 11) are paid for as TYPE 31 guardrail. The plan will also need to include the Standard Plan sheet 5-297.695.

Chapter 14 – TYPE 31 GUARDRAIL (Correction)

The following section has been moved to the new section titled "STIFFENED GUARDRAIL" There is an error in the following section which has been corrected. The highlighted area is the corrected information.

When nested rail and/or half or quarter post spacing is required use the standard pay item for guardrail and add a note to the SEQ or tab: Item includes additional posts and/or nested rail from Station XX+XXX to Station XX+XXX.

When stiffening guardrail, use the following guidance when location the additional posts (Nesting is not an option for TYPE 31 guardrail).

.....

~~How to determine where to begin/end double close post spacing of guardrail. (Nesting is not an option for Type 31 guardrail)~~

- Half post spacing (posts every 3'-1.5")
 - Begin half post spacing 12.5' before hazard
 - End half post spacing – 12.5' past hazard

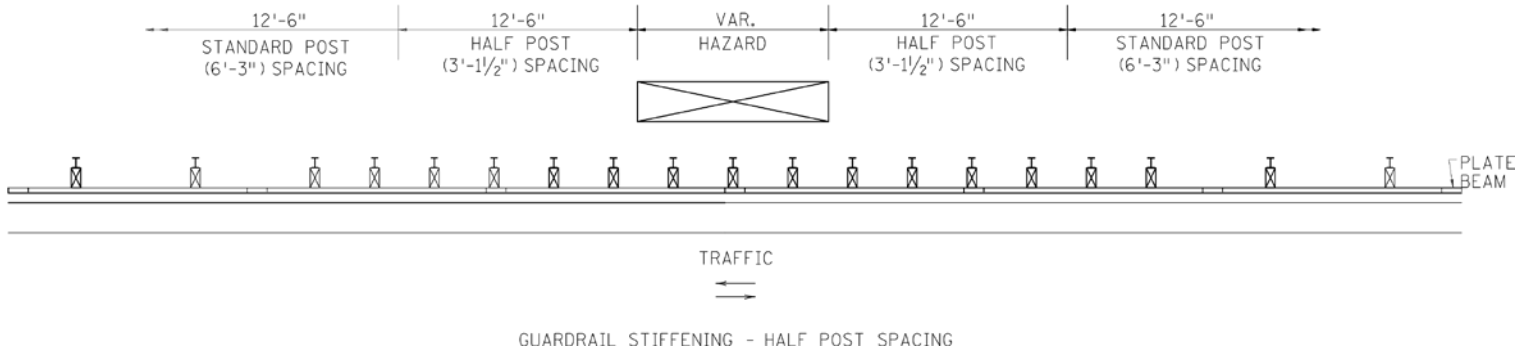
DESIGN SCENE

OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

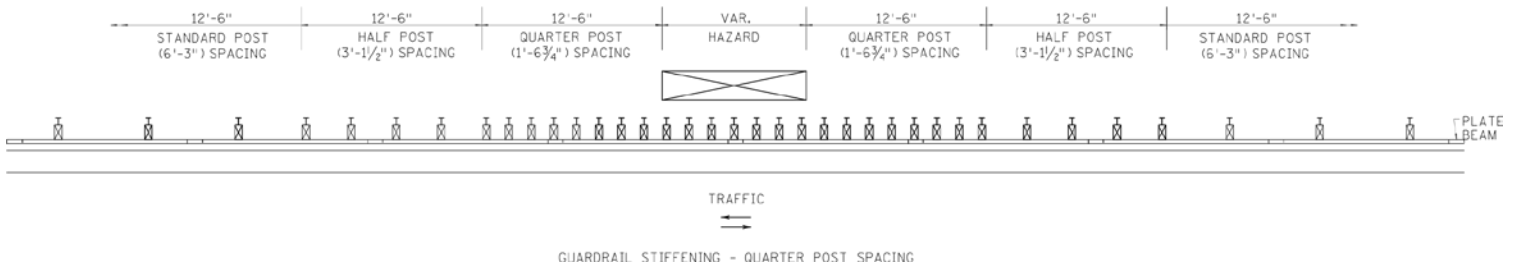


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- Quarter spacing (posts every 1' - 6.75")
 - Start half post spacing 25' before hazard
 - Start quarter post spacing 12.5' before hazard
 - End quarter post spacing 12.5' past hazard
 - End half post spacing 25' past hazard



Ending Guardrail - How far to take the guardrail beyond the hazard when shielding is not required in the opposite traffic direction? There is currently no statewide consensus on this. The guidance is different for 8338 vs. Type 31. ~~For regular post spacing it is Metro's practice to use 12'-6".~~ For the interim we would recommend that 12'-6" be used as a minimum for type 8338, and that 16'-2" be used for Type 31 (12'-6" + 3'-8").

Chapter 14 – TYPE 31 GUARDRAIL (Revised)

A portion of this section is revised as follows....

~~Minimum working widths for Type 31 guardrail are shown in the table below.~~ For Type 31 guardrail use the following table to replace the deflection table on Standard Plan 5-296.601 (1 of 3).

Estimated Design Deflection Table for Type 31 Guardrail	Minimum working width
6'-3" post spacing, 9' long posts, 1:2 back slope at post	5'-5"
6'-3" post spacing	5'

Modified 3'-1.5" post spacing	3'-7"
Modified 1'-6.75" post spacing	3'

Working width is used to determine the lateral distance from the face of the guardrail to the hazard. Working width is defined in MASH as the distance between the traffic face of the test article before impact and the maximum lateral position of any major part of the system or vehicle after the impact (see detail)... *the rest of this article does not change...*

Chapter 14 – “J” RAIL DESIGN SPECIAL

There has been some confusion regarding the type of standard plan sheet to reference for the Design Special attachment. This is based on the height of the rail. If the rail is 1'9" to center of rail (2'3" to top of rail), then you can do the “F” design with no rub rail. Some of the older “J” rails are at this height. So even though it is a “J” rail it might require the “F” rail design special detail (Standard plan 5-297.603) in the plan.

If the rail is the higher height-2'2" to center of rail (2'8" to top of rail), then you've got a bigger gap between the curb and bottom of rail, you would need to use the Standard Plan 5-297.618. It all has to do with the amount of gap between the rail and curb and the potential for snagging.

Chapter 16 - PAVEMENT MARKING TYPICALS (Revised)

Due to some confusion this section has been re-written as follows....

~~The standard details for the pavement markings have been created and are located at....~~

The Pavement Marking Typical for projects follow a general style and format. The reference files are available in PDF and DGN formats to be imported in the pavement marking plans project border. They can be found at....

<http://www.dot.state.mn.us/trafficeng/pavement/typicaldetail/index.html>

The designer should be aware that when adding some of these typicals in the .DGN file it may look as though there is some overwriting occurring. It will self-correct when loaded into ProjectWise with MnDOT fonts. This will also self-correct when printed with MnDOT print cues so do not be concerned about it.

~~It is recommended that designers start using these typicals in their plans as soon as possible. They will be required for all plans starting January 27, 2017 letting. They will be included in the plans typical border with signature.~~

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Design Notes

The Designer notes should be removed from the typicals prior to being placed in the plan. The designer notes and asterisk are on the “CAPT BLK” level. If they turn off that level all of that should disappear.

If revising the typical based on an option in the designer notes such as using a 6” marking instead of a 4” marking. This is not considered a modification and the revision can be made without following the modification guidelines below.

Modifying Typicals

Most of the typicals are used in the plans as is, but on occasion there is a need to change or modify a typical. If a typical contains information not associated with your project, it is optional for designers to cross out the undesired details/information, do NOT delete the undesired details/information from the typical.

~~If the designer modifies the typical follow the same procedures as those outlined for standard plan sheets.~~

- ~~Also~~ Fill in the modified date and designer initial in the bottom corner of the typical.
- Identify the changes made to the typical
 - ❖ Label the changes using Italicized text and
 - ❖ Add a note to the typical above the PUBLISHED DATE: **DENOTES MODIFICATION FROM STANDARD TYPICAL*
 - ❖ Use the MicroStation custom line style StdsPlnMod to place a double line (thick/thin) box around the text to highlight/identify the modification(s).
 - ❖ See example below...

~~When clarifying a typical the designer does not need to follow the modification procedure.~~

