

GUARDRAIL CHECKLIST

(most of this information can be found in the Design Scene)

- When Salvaging Guardrail you need to pay attention to the pay item and what is actually being salvaged. (see other section for how to salvage/install end treatments)
 - ✓ When the district wants to **salvage**, plate beam guardrail and , if this is the case use the following items:
 - ❖ 2104.521 SALVAGE GUARDRAIL-PLATE BEAM by the LIN FT
 - ❖ 2554.511 INSTALL TRAFFIC BARRIER DESIGN B8338 by the LIN FT...if Steel posts, 8307 if wood posts
 - ✓ When there is a run of plate beam guardrail with wood posts and the rail is in good condition (**salvage rail only**), the District may opt for salvaging the rail and replace the wood posts with steel posts, if this is the case use the following items:
 - ❖ 2104.509 REMOVE ANCHORAGE ASSEMBLY – PLATE BEAM by EACH (providing there is one inplace)
 - ❖ 2104.521 SALVAGE GUARD RAIL by LIN FT , add note to SEQ or tab: Includes the removal of the wood posts.
 - ❖ 2104.521 ANCHORAGE ASSEMBLY – PLATE BEAM by EACH (if required)
 - ❖ 2554.603 INSTALL GUARD RAIL by LIN FT, add note to SEQ or tab: Includes the Furnish and Install of steel posts.
 - ✓ When removing plate beam rail only (**posts remain**) and will not reuse the rail (this is used if the rail was hit or in poor condition and the District has decided that the posts are in good condition and would like to keep the post system), , if this is the case use the following items:
 - ❖ 2104.501 REMOVE GUARDRAIL by LIN FT
 - ❖ 2104.509 REMOVE ANCHORAGE ASSEMBLY by EACH (providing there is one inplace)
 - ❖ 2104.521 ANCHORAGE ASSEMBLY – PLATE BEAM by EACH (if required)
 - ❖ 2554.602 GUARDRAIL POST by EACH (if required)
 - ❖ 2554.603 PLATE BEAM RAIL by LIN FT
- When removing plate beam guardrail (including posts and end treatment) and will not be reusing the guardrail but replace the existing system with new (**removing guardrail plate beam – complete system**), if this is the case use the following items:
 - ❖ 2104.501 REMOVE GUARD RAIL – PLATE BEAM by LIN FT
 - ❖ 2104.509 REMOVE ANCHORAGE ASSEMBLY – PLATE BEAM by EACH (providing there is one inplace)
 - ❖ 2104.509 REMOVE specify end treatment (i.e. twisted end, energy absorbing, etc...) by EACH (see section on end treatments)
 - ❖ 2554.501 TRAFFIC BARRIER DESIGN B8338 by LIN FT for steel posts
 - ❖ 2554.501 TRAFFIC BARRIER DESIGN B8307 by LIN FT for wood posts

- ❖ 2554.521 ANCHORAGE ASSEMBLY – PLATE BEAM by EACH (if required)
- ❖ 2554.521 END TREATMENT – specify (see section on end treatments)
- When ***plate beam meets cable*** the plan should include:
 - ❖ 2554.523 END TREATMENT-ENERGY ABSORBING TERMINAL by the EACH,
 - ✓ Add the note...Shall be flared and have steel posts.
 - ✓ Need to also reference Standard Plate 8340 for steel posts,
 - ✓ Do NOT put the detail in the plan for the FLEAT-350.
- When ***removing twisted end treatments*** the designer needs to state if in it includes anchorage blocks. Twisted end treatments are 50' removal of guardrail unless really, really old then 25'.
- When ***salvaging Design Special...***
 - ✓ It can only be salvaged if the existing design special is up to present standards.
 - ❖ Use 2104.521 SALVAGE GUARDRAIL – PLATE BEAM by LIN FT and add a note: INCLUDES DESIGN SPECIAL
 - ❖ If you are able to INSTALL the design special then use 2554.511 INSTALL TRAFFIC BARRIER DESIGN B8338 by LIN FT and add a note: INCLUDES DESIGN SPECIAL
 - ✓ Design Special can only be installed on the same structure it was salvaged from.
- When ***removing Design Special*** pay for it as 2104.501 REMOVE GUARDRAIL – PLATE BEAM by LIN FT and add a note: INCLUDES DESIGN SPECIAL.
- When using 2554.501 TRAFFIC BARRIER DESIGN SPECIAL by LIN FT it includes the bridge connection 8318. When placing on the downstream side of the bridge rails and you don't need a design special use 2554.602 T-BARRIER BRIDGE CONN DES 8318 by EACH.
- When ***removing end treatments*** use the following items...
 - ❖ 2104.509 REMOVE ENERGY ABSORBING TERMINAL by EACH, note what it is (i.e. ET-2000, SKT-350, etc)
 - ❖ 2104.509 REMOVE TWISTED END TREATMENT by EACH, note if it includes the removal of anchorage blocks.
 - ❖ 2104.509 REMOVE ECCENTRIC LOADER BCT by EACH
 - ❖ 2104.509 REMOVE SLOTTED RAIL TERMINAL by EACH
 - ❖ 2104.509 REMOVE ANCHORAGE ASSEMBLY – PLATE BEAM by EACH
 - ❖ 2104.509 REMOVE ANCHORAGE ASSEMBLY – CABLE by EACH
- When ***salvaging & install End Treatments***, when wood posts can NOT be replaced with steel posts on end treatments. If that is desired then it would have to be a new system not an install.
- When ***salvaging an existing guardrail end treatment*** then use the following items....
 - ❖ 2104.523 SALVAGE ANCHORAGE ASSEMBLY – CABLE by EACH

- ❖ 2104.523 SALVAGE ANCHORAGE ASSEMBLY –PLATE BEAM by EACH
 - ❖ 2104.523 SALVAGE ENERGY ABSORBING TERMINAL by EACH. This is used on existing treatments. Add a note to the SEQ or TAB stating what it is (e.g. 4=FLEAT 350 & 3=SKT 350).
 - ❖ 2104. 523 SALVAGE SLOTTED RAIL TERMINAL by EACH
 - ❖ 2104. 523 SALVAGE ECCENTRIC LOADER BCT by EACH, This can only be salvaged for parts, it cannot be re-installed.
 - ❖ 2104.523 SALVAGE ANCHORAGE ASSEMBLY – PL BEAM by EACH
 - ❖ 2104.523 SALVAGE ANCHORAGE ASSEMBLY – CABLE by EACH
 - ❖ 2554.602 INSTALL ANCHOR ASSEMBLY – 3 CABLE by EACH
 - ❖ 2554.602 INSTALL ANCHOR ASSEMBLY –PLATE BEAM by EACH
 - ❖ 2554.602 INSTALL ENERGY ABSORBING TERMINAL by EACH. This is used on existing treatments. Add a note to the SEQ or TAB stating what it is (e.g. 4=FLEAT 350 & 3=SKT 350).
 - ❖ 2104.602 INSTALL SLOTTED RAIL TERMINAL by EACH
- If, however it is an instance where the contractor will be salvaging a guardrail end treatment as a result of staging cross traffic. Then use the following items...
- ❖ 2104.523 SALVAGE TANGENT TERMINAL by EACH *
 - ❖ 2104.523 SALVAGE FLARED TERMINAL by EACH **
 - ❖ 2554.602 INSTALL TANGENT TERMINAL by EACH *
 - ❖ 2554.602 INSTALL FLARED TERMINAL by EACH **
- *Note shall be SKT-350 or ET-PLUS
- ** Note shall be either SRT-350 or FLEAT-350.
- ✓ Include a detail in the plan for possible options.
- When furnish & install *new end treatments* then use the following items....
- ❖ 2554.521 ANCHORAGE ASSEMBLY – CABLE by EACH
 - ❖ 2554.521 ANCHORAGE ASSEMBLY –PLATE BEAM by EACH
 - ❖ 2554.523 END TREATMENT - TANGENT TERMINAL by EACH (Include details in plan and note that is shall be SKT-350 or ET-PLUS)
 - ❖ 2554.523 END TREATMENT - FLARED TERMINAL by EACH (Include details in plan and note that is shall be either SRT-350 or FLEAT-350)
- ✓ An EXCEPTION to this would be (**FLARED TERMINAL ONLY**):
- The SRT-350 with wood posts, is the only SRT terminal currently approved. The FLEAT-350 is the only approved flared treatment that has steel posts and is energy absorbing. So, if the District wants to have an energy absorbing flared terminal with steel posts, then the following pay item should be used:
- ❖ 2554.523 END TREATMENT - ENERGY ABSORBING TERMINAL by EACH, add note to SEQ or tab: *Shall be flared and have steel posts.*
- If this situation is used alone (no other end treatments) in your plan then **Do NOT** include the detail in plan for a flared terminal. If you are using this item along with the End Treatment – Flared Terminal pay item then the details for the flared terminals should be included in the plan.

- When salvaging and installing end treatments you can't replace wood posts with steel posts. You must put in a new system instead.
- Use 2554.501 TRAFFIC BARRIER DESIGN B8338 by LIN FT when plate beam with steel posts.
- Use 2554.501 TRAFFIC BARRIER DESIGN B8307 by LIN FT when plate beam with wood posts.
- Use 2554.501 TRAFFIC BARRIER DESIGN 8330 by LIN FT when cable with wood posts.
- Use 2554.501 TRAFFIC BARRIER DESIGN 8331 by LIN FT when cable with steel posts.
- Need to check the guardrail tab against the video log and the removal and construction plans to make sure the stationing and items agree. Need to notice if both ends of the guardrail are addressed as it always works in tension. By that I mean if there aren't end treatments then are there anchorage assemblies?
- If attaching a design special to a **flat wall** include standard plan sheet 5-297.619 (see below). The designer needs to contact the bridge office to determine if a new concrete end post is needed. If it is then...
 - ✓ Make sure the plan includes the correct Design Special Detail.
 - ✓ For flat face rail include Standard Plan 5-297.619 and add a note on the plan that...CONCRETE END POST IS NOT REQUIRED.
 - ✓ If a detail is needed make sure you have one in the plan
 - ✓ Paid for as part of the F-Barrier
- If there are several types of design specials used make sure that the appropriate standard plan sheets are included in the plan and that the tabulation identifies which detail pertains to which design special.
- If using a **post seat** the plan when the posts can't go deep due to culver depth, they will need to either...
 - ✓ Reference standard plate 8316 which must use wood posts, or
 - ✓ Add a detail for the post seat using steel posts.
 - ❖ Paid for as 2554.602 GUARDRAIL POST SEAT by the EACH.
- When they have a **curved section** of guardrail you need to make sure they have the short radius detail in the plan. You must include wood posts, use 2554.501 TRAFFIC BARRIER DESIGN B8307 by the LIN FT for the weak posts. You CANNOT use steel posts for these.
- **Impact Attenuator Assembly ...**
 - ✓ These are things such as CAT, NEAT, QuadGuard, etc.. Barrel assemblies are paid for as 2554.602 IMPACT ATTENUATOR BARRELS by the EACH. Barrel assemblies are

NOT paid for as Impact Attenuator assemblies because if you damage a few barrels you don't want to have to pay for all new barrels.

- ✓ Need to add a note to the SEQ if the attenuator assembly is a permanent or temporary installation as that will affect the price.
- When the plan has **High Tension Cable** it will need to include the following:
 - ✓ Standard Plan 5-297.688
 - ✓ Standard Plate for HTCB/Line Post Foundation/Concrete Design 8342
 - ✓ Standard Plate for HTCB/Line Post Foundation/Steel Design 8343 (Pending, check with Design Standards for a detail if needed)
 - ✓ Consider the following or similar construction notes for use on HTCB projects, if not already covered elsewhere within your project:
 - All drainage inlets within 200 feet of any disturbed soil in the median shall be
 - Provided with appropriate inlet protection prior to disturbance. Inlet protection
 - Shall be incidental unless otherwise specified in the contract.
 - All material removed and not reused on this project shall become the property of the contractor and be disposed of outside MnDOT Right of Way in accordance with Spec. 2106.
 - Salvage and installation of culvert marker posts are incidental.
 - Any required grading for HTCB shall be done before guardrail posts are set.
 - Roads shall be kept clean of sediment. Use a street sweeper with pick-up type,
 - non-dust generating power broom as often as necessary to keep roads visibly
 - clean within 24 hours of activity that generates sediment tracking or before
 - opening the affected lane to traffic, whichever comes first. All street sweeping
 - work, including street sweeper, shall be incidental.
 - Post foundations shall be flush with the ground line posts shall be placed plumb.
 - For all construction activities within designated noxious and invasive weed infested areas as shown in the plan, see special provisions.
 - Any required mowing for High Tension Cable Barrier (HTCB) construction is incidental.
 - ✓ Do NOT place the tension cable guardrail in the bottom of the ditch.
 - ✓ There has been some problems with the weld not being done properly in the plans and in the field. Make sure that the latest detail is in the plan.