GENERAL NOTES

1. This sheet shall be used when guardrail end treatment type I is specified.

2. The details on this sheet are for the assembly and the installation of the components of guardrail end treatment type I.

INDIANA DEPARTMENT OF TRANSPORTATION

GUARDRAIL END TREATMENT TYPE I

APRIL 1995

STANDARD DRAWING NO. E 601-GRET-04

DETAILS PLACED IN THIS FORMAT 11-15-95

/s/ Anthony L. Kurovich 11-15-95
DESIGN ENGINEER

/s/ Finno Reisau, Inc. 11-15-95
CONTRACTOR
**GENERAL NOTES**

1. The top of rail height at this post shall match the height of the adjacent guardrail.

2. Installation of guardrail end treatment type I at the end of a run of rub-rail type guardrail shall require the relocation of the rub-rail as shown.


4. If rub-rail is not spliced at post, the channel shall be cut and repositioned behind the post flange.

5. See Standard Drawing E 608-WKB-03 for Object Marker Type 3 Details.


---

**CONCRETE ANCHOR DETAIL**

**LAP DETAIL**

Class A concrete anchor shall be:

- 3'0 x 3'-0 deep cylinder or
- 3'-0 x 3'-0 x 3'-0 cubes

**PLAN**

Guardrail alignment

One 25' or two 12'-8 W-beam sections

13'-10 3/8

12'-8

12'-8

12'-8

**ELEVATION**

Post No. 1 & No. 2 length = 8'-0

Post No. 1

Post No. 2

**RUB-RAIL RELOCATION DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

END TREATMENT TYPE I

SEPTEMBER 2008

STANDARD DRAWING NO. E 601-GRRT-06
NOTES:

1. The required guardrail offset shall be 0 to 2'-0" desirable as specified in the plans. The offset used between the edge of required shoulder and the face of rail shall also be used to establish the berm width at the end of the guardrail and treatment.

2. This distance may vary from 0 to 2'-0" desirable.

3. These dimensions are based on a 2'-0" guardrail offset and must be adjusted for other offset distances to maintain a 10:1 taper.

4. Grading profiles at Section A-A for types OS and type I guardrail end treatments are shown on Standard Drawings E 801-GRET-08, and -09.

5. Limits of compacted aggregate.

6. Length and width of OS Unit Test Level 3 (TL-3)
   Length = 50'-0"
   Width = 2'-0"

INDIANA DEPARTMENT OF TRANSPORTATION

GRADING AT GUARDRAIL END TREATMENTS

March 2004

STANDARD DRAWING NO. E 801-GRET-08
NOTES:
1. Grading cross section Option 1 is most desirable and shall be used on new construction. Option 7 is least desirable. The grading cross section to be used shall be as detailed or specified on the plans. A more desirable option may be used in lieu of the option specified.
2. The backslopes on Option 3 shall not exceed 2:1 on 3R projects.
4. See plan views on Standard Drawing E 601-GRET-08.
5. Plow or deeply scarify for existing slopes 4:1 or flatter.
6. Section A-A Options 1, 2, and 3 may be used with guardrail and treatment type I or D8.
Non-Recoverable Proposed Slopes (Options 4, 5, 6 and 7)

**OPTION 4**
- 4:1 slope for 20', then
- 3:1 slope and ditch relocated.
- 4:1 or flatter desirable (2:1 max.)

**OPTION 5**
- 4:1 slope for 10', then
- 3:1 slope and ditch relocated.
- 4:1 or flatter desirable (2:1 max.)

**OPTION 6**
- 4:1 slope for 10', then
- 3:1 slope and ditch relocated.
- 4:1 or flatter desirable (2:1 max.)

**OPTION 7**
- 2:1 slope and ditch relocated.
- (2:1 max.)

**NOTES:**
1. Grading cross section Option 1 is most desirable and shall be used on new construction. Option 7 is least desirable. The grading cross section to used shall be as detailed or specified on the plans. A more desirable option may be used in lieu of the option specified.
2. Options 4 through 7 may only be used on a 3R/4R partial reconstruction project with right-of-way restrictions.

**INDIANA DEPARTMENT OF TRANSPORTATION**

**GRADING AT GUARDRAIL END TREATMENTS**

**SEPTEMBER 2002**

**STANDARD DRAWING NO. E 801-GRET-08**

**VERIFIED**

[Stamp with names and dates]
NOTES:
1. All posts are 6 ft in length from where the guardrail begins away from the shoulder back to the post anchor. Posts for the post anchor are 8 ft long.
2. Guardrail height may be tapered down in elevation to maintain 3-ft minimum.
3. A 4:1 or flatter slope is desirable. However, a steeper or faltering slope may be used.
4. Ventilated ditch culverts may be used to fit field conditions.
5. See Standard Drawing E 801-CRM-14 for rail end anchor detail and post anchor details.
7. Ditch cross section profile should be same as upstream ditch cross section profile and have same or greater hydraulic capacity.
9. Posts shall be installed only from the required ditch cross section to maintain ditch's hydraulic capacity.
STEEL PLATE DETAIL

STEEL PLATE AND WASHER DETAILS

3 - 1" holes to be field drilled in rail and attached to steel plate with 1/2" hex bolts 2" long with square washer.

W-beam rubrail

Wood block

Steel post W 6 x 9
6'-0" long

Drill extra 3/4" hole in post flange each side

Steel post W 6 x 9
6'-0" long

Bolt plate to post with 4 - 5/8" hex bolts 2" long with hex nuts

INDIANA DEPARTMENT OF TRANSPORTATION
GUARDRAIL END TREATMENT
TYPE II - COMPONENTS
SEPTEMBER 2000
STANDARD DRAWING NO. E 601-GRET-11

Anthony L. Dzenovich 9-01-00
DESIGN STANDARDS ENGINEER

Firas Saeidi 9-01-00
DESIGN STANDARDS ENGINEER
NOTES:

1. Grading requirements shown are for 5'-0 or larger structures, and three-sided structures on project constructed on new alignment for design speed of 70 mph rural divided highway.

2. Grading shown above is applicable for 25'-0 span needed guardrail also.

3. Grading requirements for 5'-0 or larger structures and three-sided structures constructed on existing alignments at all design speeds are shown in standard Drawings E 501-GRET 08 through 09.

INDIANA DEPARTMENT OF TRANSPORTATION
GRADING REQUIREMENTS FOR LARGE DRAINAGE STRUCTURE
SEPTEMBER 2001
STANDARD DRAWING NO. E 501-GRET-12