



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**ROADWAY DESIGN DIVISION**  
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**JOHN C. SCHROER**  
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**INSTRUCTIONAL BULLETIN NO. 14-03**

**Regarding Retaining Wall Requests**

**Effective for the August 29<sup>th</sup> Letting (June 18<sup>th</sup> Turn-in), the entirety of Section 2-175.00 is revised as attached and Sections 2-175.01 and 2-175.02 and 6-240.00 are added to the Design Guidelines. **Projects having completed or scheduled to complete Right-of-Way phase by October 1, 2014 are exempt from these changes.****

**PURPOSE:** This Instructional Bulletin revises the procedure for determining and requesting retaining wall.

A handwritten signature in cursive script that reads "Jennifer Lloyd".

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Jennifer Lloyd, PE  
Civil Engineering Director  
Roadway Design Division

4/22/14  
JL:AH:MC

## 2-175.00      **RETAINING WALLS DETERMINATION PROCESS**

During the development of many roadway design projects, proposing a retaining wall is necessary due to right-of-way limitations, environmental impacts, drainage issues, or the need to reduce damage to adjacent properties. During preliminary plans development the designer shall determine if a retaining wall will be required. Once the need (or possible need) for a retaining wall is determined the designer shall prepare a Retaining Wall Detail Sheet for the Structures Division to further use in developing the wall layout. The retaining wall design process shall be initiated after preliminary plans are finalized.

For all design projects that contain retaining walls or that could potentially contain retaining walls, the responsibilities of the Roadway Design Division in relation to proposing a retaining wall design shall be as follows:

### **A-      PREPARE THE RETAINING WALL DRAWINGS**

#### **Retaining Wall Detail Sheet requirements**

The information below must be shown on the proposed retaining wall typical section, layout, and profile details. (See Figure 2-21D for example)

**Typical Section:** The designer shall show a typical section of the retaining wall and label the following information (See Figure 2-21A for example of cut and fill section walls):

- Offset from centerline to the retaining wall.
- Existing and Proposed Right-of-way and easements
- Miscellaneous details of wall appurtenances such as traffic barriers, coping, fencing, drainage, location and configuration of signs and lighting including conduit locations, and any nearby utilities that may affect the construction of the wall.
- Any Context Sensitive Solution Design requests.

**Layout:** The designer shall show the proposed layout of the retaining wall relative to the roadway centerline and existing or proposed right-of-way boundary. The layout shall show the station and offsets for beginning, end and all breakpoints; right-of-way and easements, and label the distance between the wall and proposed right-of-way. (See Figure 2-21B for example)

**Profile:** The designer shall show a profile view of the top and bottom of the wall. The designer shall also identify the square footage of the exposed wall face (See Figure 2-21C for example).

The right side of the sheet is reserved for geotechnical and structural information. The designer shall place all three drawings on the left side of the sheet.

### **Roadway Plan Sheets Requirements**

The information below must be added to the roadway plans. Since the detailed information for the retaining wall is shown on the "Retaining Wall Detail Sheet" less information is required to be shown on the roadway plan sheets.

**Special Notes:** The designer shall add the Retaining Wall Special Notes 1-4. (See Section 6-240.00)

**Proposed Sheet:** The designer shall show the retaining wall on the proposed sheet. Only beginning and end stations should be labeled.

**Profile Sheet:** The designer shall show the retaining wall elevation on the profile sheet. Only beginning and end stations should be labeled.

**Cross Sections:** The designer shall show the retaining wall on the cross sections. At stations where a retaining wall is present the designer shall locate and label the existing and proposed right-of-way.

### **FileNet Archiving**

The designer shall place the following files into a compressed file and onto FileNet with the name: **nnnnnn-nn-Retainingwall.zip**

- Retaining Wall Detail Sheet (.dgn)
- Roadway plan sheets proposed, profile and cross-section showing the location of the proposed retaining wall (.tin and .gpk files).
- Survey, Proposed and Alignment Files (.dgn)

## **B- RETAINING WALL COST ESTIMATE**

In cases when there is no alternative but to build a retaining wall (such as near historical or environmentally sensitive areas) the designer should proceed directly to the step C.

When a retaining wall is proposed to limit right-of-way acquisition only, a cost evaluation is required to evaluate the economics of the proposed wall. The designer shall fill out the Request for Cost Estimate Form (See Figure 2-21E) and email it to the Structures and Right-of-Way Divisions. The designer shall identify the amount of ROW required (including the tract numbers) for the no build option and the amount of ROW required for the retaining wall build option to assist Right-of-Way Division in preparing their estimate.

After receiving the cost estimates the designer will proceed to the next step if the retaining wall is deemed economically feasible. If the retaining wall is found to not be cost effective, the project will be designed without a retaining wall and include the larger right-of-way acquisition.

## **C- PROCEED WITH RETAINING WALL DESIGN**

At this step, the retaining wall has been determined to be necessary. The designer will fill out the Notice to Proceed on Retaining Wall Design form letter (see Figure 2-21F) and email to Structures Division. When biological, environmental, hazardous materials, historical or archeological factors are involved it will be necessary to coordinate with the Environmental

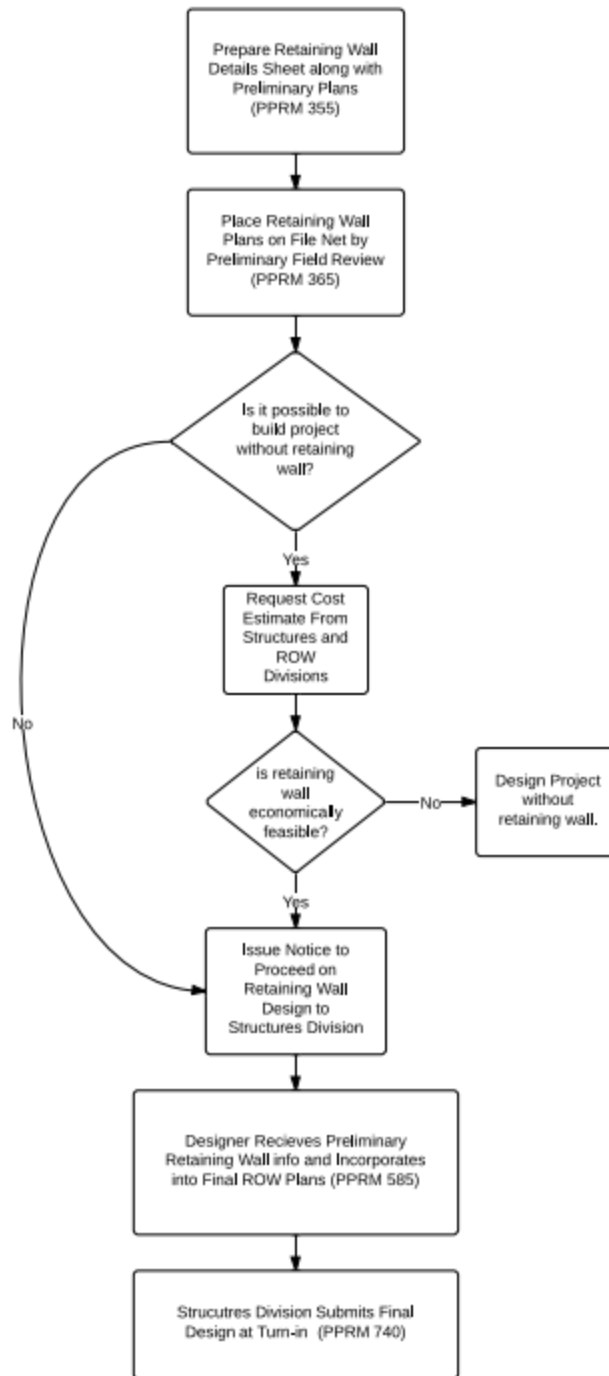
Division to ensure that the area is properly protected and identified. The designer shall note any additional requirements on the wall in the letter (such as a barrier system incorporated into the wall).

Structures Division will communicate with the Geotechnical Section and produce a preliminary retaining wall structural design layout by the Right-of-Way Field Review including all acceptable wall types and associated ROW needs. Once preliminary structural design is received, the designer shall incorporate the information on the Retaining Wall Detail Sheet and Roadway Plans for Right-of-Way turn-in. If there is any need to revise the wall alignment, the designer shall update the plans and revise and resend the Retaining Wall Detail Sheet to Structures Division.

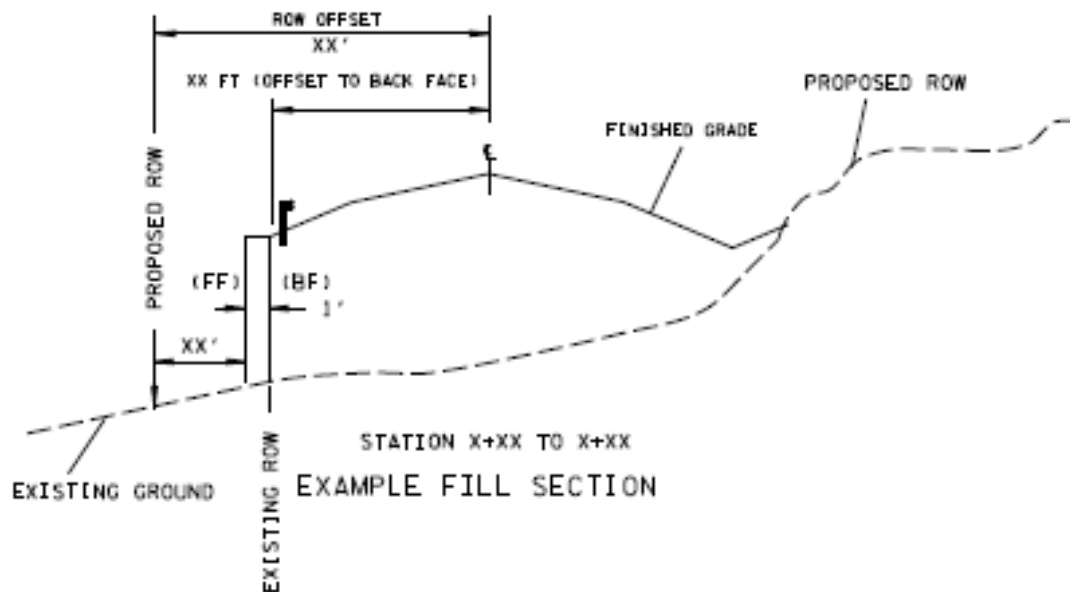
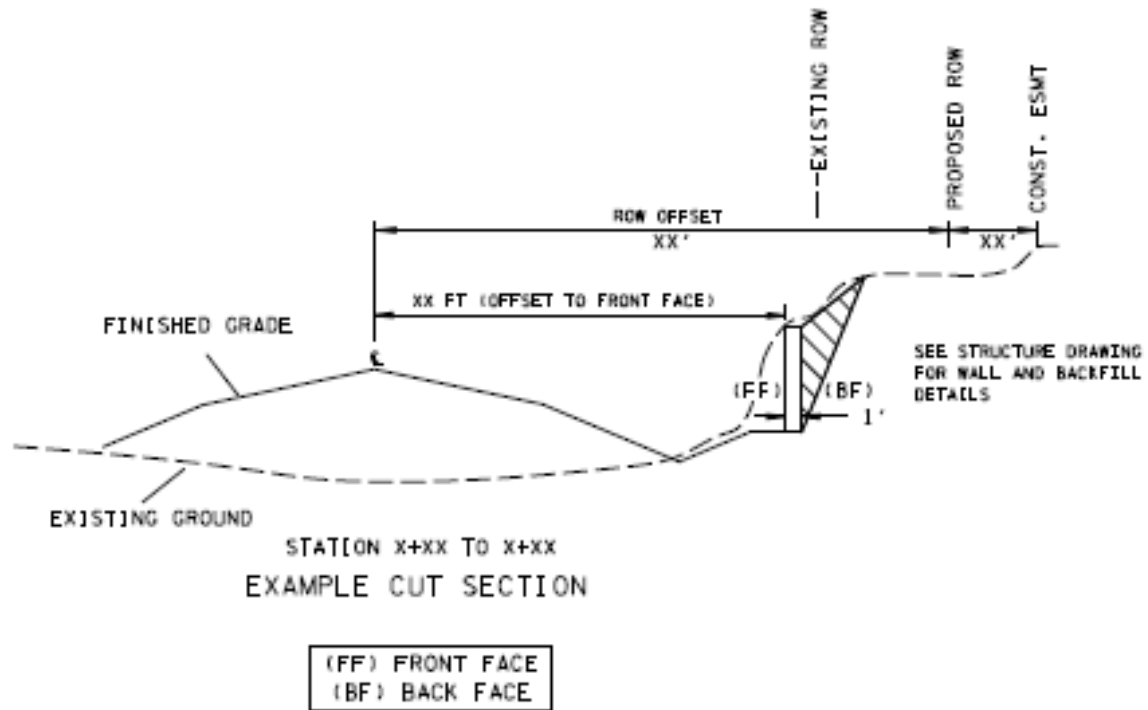
For the Roadway Plans prepared by consultants, the cost estimate request/notice to proceed should be prepared as described above and emailed to the Roadway Design Manager for review. Upon acceptance, the Design Manager will forward the package to the appropriate divisions.

The designer shall notify Structures Division whenever major design revisions are made that could affect the retaining wall design.

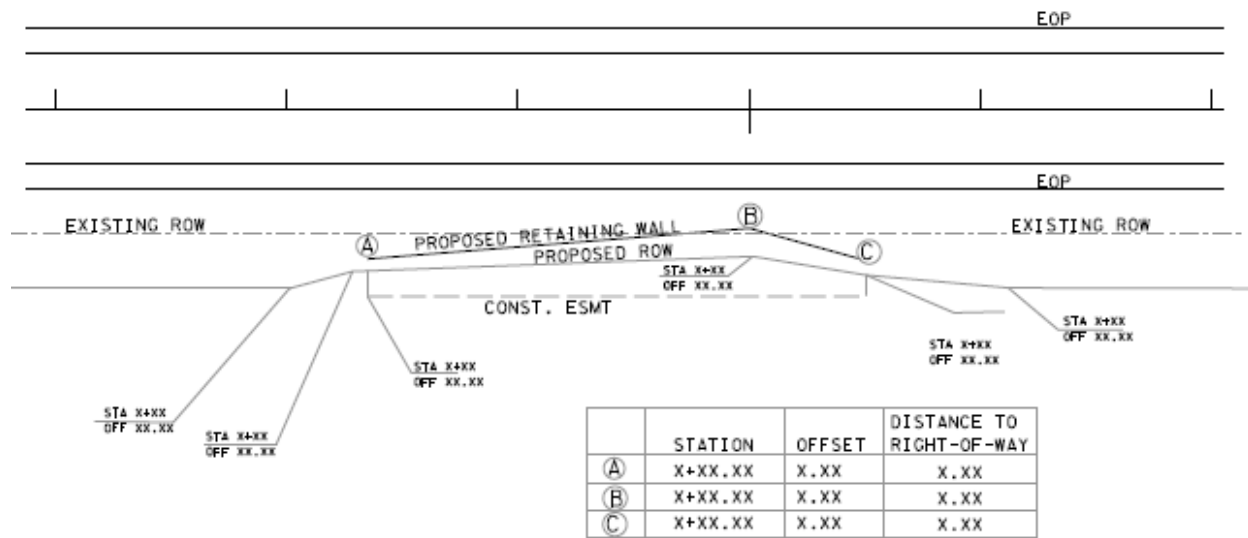
The flow chart in Figure 2-21 depicts the Roadway Design Division's responsibilities with regard to determining and proposing a retaining wall.



**Figure 2-21**  
**Flow Chart for Determining and Proposing a Retaining Wall**

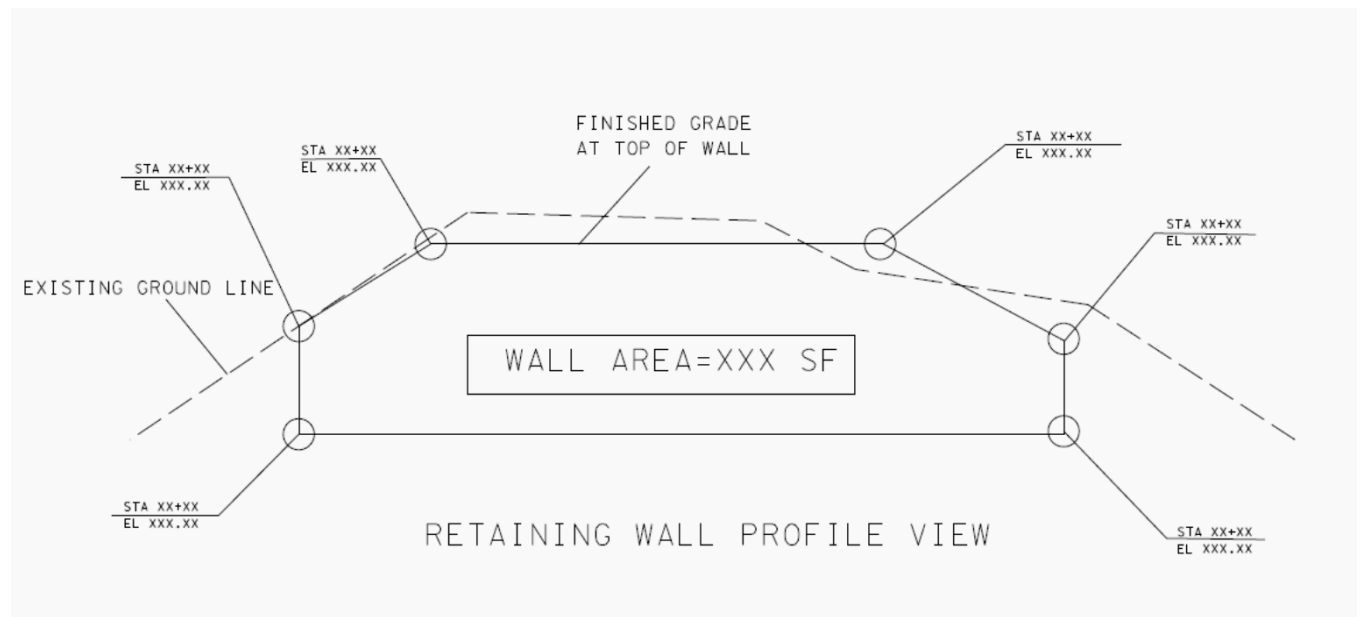


**Figure 2-21A**  
**Example of Retaining Wall Typical Sections for Cut or Fill Sections**



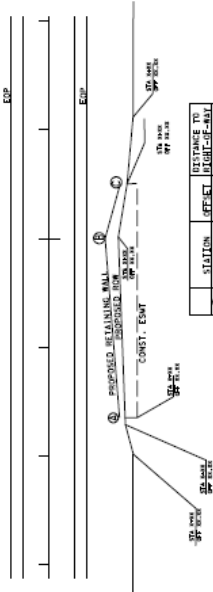
RETAINING WALL LAYOUT DETAILS

**Figure 2-21B**  
**Example of Retaining Wall Layout Details**



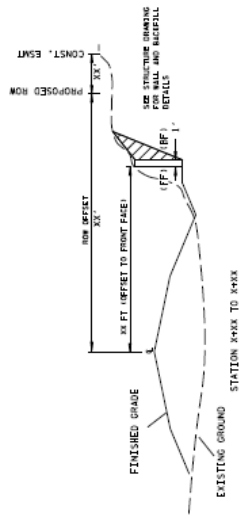
**Figure 2-21C**  
**Example Retaining Wall Profile**

TYPE	NO.	PROJECT NO.	SHEET NO.
RM	0011	1000-0000	1

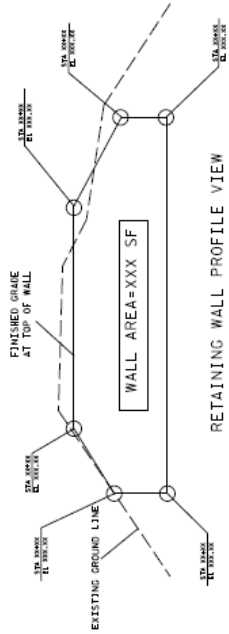


STATION	EFFECT	DISTANCE TO RIGHT-OF-WAY
0+00	START	0.00
0+10	END	10.00
0+20	START	20.00
0+30	END	30.00
0+40	START	40.00
0+50	END	50.00

RETAINING WALL LAYOUT DETAILS



TYPICAL RETAINING WALL SECTION



RETAINING WALL PROFILE VIEW

SCALE: 1" = 10'-0"

STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION  
RETAINING WALL  
DETAILS

Figure 2-21D  
Example Retaining Wall Detail Sheet





**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
Roadway Design Division  
RETAINING WALL COST ESTIMATE**

TO:           Region \_ Right-of-Way Division  
              Structures Division

FROM:       Roadway Design Manager overseeing the project

DATE:

Project Number:	County:
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A retaining wall has been identified for this project as a possible option for the following reasons ([DESIGNER TO TYPE JUSTIFICATION HERE](#)). However, the Department has the option to not build the wall should it prove to not be economically beneficial to do so. For this reason we are requesting a cost estimate for both the “build” and “no build” options.

**Right-of-Way Division:** please prepare a cost estimate of the additional right-of-way purchase(s) for the no build option and return to the design manager at your earliest convenience.

Build Option

Tract No	Approximate Additional Right-of-Way Needs (Acres)	Estimated Cost
<a href="#">Designer to Fill In</a>	<a href="#">Designer to Fill In</a>	
<a href="#">Designer to Fill In</a>	<a href="#">Designer to Fill In</a>	

No-Build Option

Tract No	Approximate Additional Right-of-Way Needs (Acres)	Estimated Cost
<a href="#">Designer to Fill In</a>	<a href="#">Designer to Fill In</a>	
<a href="#">Designer to Fill In</a>	<a href="#">Designer to Fill In</a>	

**Structures Division:** please provide a preliminary cost estimate for the retaining wall, and identify the amount of any additional easements required to build the proposed wall and possible alternatives and return to the design manager at your earliest convenience. Do not proceed to full design until notified by Roadway Design Division.

The Preliminary Plans (see typical section, proposed layout and profile sheets) and related files are on FileNet under the name: [nnnnnn-nn-RetainingWall.zip](#)

The proposed retaining wall(s) is located at station: [XX+XX to XX+XX](#)

Please contact me with any questions.

**Figure 2-21E  
Retaining Wall Cost Evaluation Request Letter**



STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
Roadway Design Division

**NOTICE TO PROCEED WITH RETAINING WALL DESIGN**

TO: Structures Division  
[Hydraulic Section \(if appropriate\)](#)

FROM: [Roadway Design Manager overseeing the project](#)

DATE:

Project Number:	County:
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After evaluating the cost estimates it has been determined that the retaining wall is cost effective. Please proceed with design and identify acceptable alternative wall types.

Please provide a Preliminary Retaining Wall Layout (including any acceptable wall types) to the designer by this date: [\(Designer to enter the date of the Right-of-Way Field Review\)](#). The retaining wall information shown on the preliminary plans is conceptual in nature, please modify or verify those details in you preliminary structural design to allow the designer to finalize right-of-way. Please note the following right-of-way restrictions in determining your design and approved alternatives: [\(Designer to enter all right-of-way restrictions at the wall location here\)](#)

It is the responsibility of the structural designer to coordinate with the Geotechnical Section for any soil surveys deemed necessary by the structural designer.

The Preliminary Wall Layout Drawings and related files are on filenet under the name: [nnnnnn-nn-RetainingWall.zip](#)

Please contact me with any questions.

## **2-175.01      RETAINING WALLS PAY ITEM**

Retaining walls shall be paid for by the square foot of wall face. Each individual retaining wall shall be paid for under an individual number using the following item numbers:

604-07.01	RETAINING WALL (DESCRIPTION)	PER SF
Through		
604-07.23	RETAINING WALL (DESCRIPTION)	PER SF

The designer should enter the beginning and end station of the retaining wall as the description.

## **2-175.02      RETAINING WALLS BARRIER SYSTEM REQUIREMENTS**

The designer shall show proper barrier type associated with the acceptable wall type.

Retaining walls in fill sections will require a barrier system due to the drop off. If there is sufficient room the barrier system should be placed away from the wall. If the only option is to include the barrier as part of the wall the designer shall notify Structures Division in the Notice to Proceed with Retaining Wall Design. If the barrier system is incorporated into the retaining wall the designer shall add the following footnote to the retaining wall item number for each individual wall that the condition exists:

“Cost of concrete barrier incorporated into the retaining wall shall be included in the cost of the retaining wall. The barrier shall be designed as TL-4 rail as defined by section 13 of the AASHTO Bridge Design Specifications.”

Retaining walls in cut sections may require a barrier system. Generally all retaining wall types inside the clear zone, except for cast-in-place reinforced concrete walls, require a concrete barrier (S-SSMB-3). If the wall is outside of the clear zone a retaining wall may not be required unless deemed appropriate by engineering judgment.

## **6-240.00      RETAINING WALLS**

The following special notes (modify as needed) are to be added to the Special Notes Sheet on projects with Retaining Walls.

- 1) THE (RIGHT-OF-WAY/EASEMENT) BETWEEN STATION \_\_\_ TO STATION \_\_\_ SHALL REMAIN CLEAR FOR THE CONSTRUCTION OF THE RETAINING WALL. NO UTILITY LINES MAY BE PLACED HERE WITHOUT APPROVAL FROM STRUCTURES DIVISION.
- 2) THE OPTIONS FOR RETAINING WALL TYPES SHALL BE LIMITED TO THE APPROVED ALTERNATIVES AS SPECIFIED ON THE RETAINING WALL SHEET(S).
- 3) VALUE ENGINEERING CHANGE PROPOSALS WILL NOT BE ACCEPTED FOR RETAINING WALLS. (ITEM NUMBER(S): 604-07.\_\_\_) For projects with multiple retaining walls include all retaining wall item numbers.
- 4) ALL COST OF BUILDING, INSTALLING AND BACKFILLING THE RETAINING WALL SHALL BE INCLUDED IN THE COST OF THE RETAINING WALL.