

2-2.20 Retaining Wall Plans, Profiles, Details, and Quantities

General

Standard plans are available for a variety of crib walls and concrete retaining walls. Loading conditions and foundation requirements are outlined in the Standard Plans. For sites with requirements that are not covered by the Standard Plans, a special design earth retaining system is required. Refer to Topic 210 of the Highway Design Manual.

A foundation investigation should be made for all locations at which a retaining wall is being considered. Foundation investigations are made by the Division of Engineering Services – Geotechnical Services. Foundation recommendations should be included in the project history file. When log of test boring information is developed, it shall be included with the retaining wall plans as Log of Test Boring sheets.

Retaining walls are to be shown on the project typical cross sections when they are within the majority of the station limits given. Retaining wall layout lines should be shown on the project layout sheets to show their location in relation to the roadway alignment.

The plan set for each earth retaining wall should include:

- Wall plan view
- Typical wall cross section
- Wall profiles
- Wall details
- Wall quantities
- Log of test borings

Plans

The wall plan view should include:

- Existing contour lines
- Wall layout line
- Controlling roadway stationing, tangent bearings and equations
- Begin and end stations of wall layout line, including offsets
- Horizontal curve data (delta, radius curve, tangent, and length), if applicable for wall layout line
- Varying width of the footing (if used)
- Surface and subsurface drainage structures or utilities that could affect or be affected by wall construction
- Right of way lines and easements
- Elevation and location of existing facilities to remain in place during wall construction

Typical Wall Cross Section

The typical wall cross section, in most cases, is shown on the first sheet of the wall plans and should include:

- Designation of wall type
- Wall batter (if used)
- Wall layout line
- Original ground line
- Finished grade on both sides of wall
- Gutter or other wall drainage feature (if used)
- Railing or fencing on top of wall (if used)
- Barrier attached to wall (if used)
- Temporary railing (Type K), if needed for adjacent traffic during construction (show its placement relative to the wall)

Additional wall cross sections shall be included for those locations where the wall layout line in relation to the right of way line is critical.

Each sheet of the wall plans, depending on type of wall, shall have a note included on them, such as: "APPROVED FOR RETAINING WALL WORK ONLY."

Profiles

The wall profile should include:

- Horizontal to vertical scale ratio of 1:1
- Datum for vertical alignment
- Design heights and respective wall lengths
- Top of wall elevations
- Bottom of wall leveling pad elevations or footing elevations (as appropriate for type of wall foundation)
- Existing ground line at the wall layout line
- Finished grade
- Locations of expansion joints and weakened plane joints
- Architectural treatment of wall (if used)

Details

Special wall details, as applicable to wall construction, such as sign bases, utility openings, drainage features, fences, and concrete barriers should be included on the wall plan sheet of the wall concerned or included on a separate detail sheet with the wall plans. If a special wall detail is developed by the Division of Engineering Services-Office of Structure Design for a district designed wall, then the detail provided by Office of Structure Design is to be included with the district designed plans for that specific wall.

If aesthetic features are to be incorporated in the wall, include detail sheets for the aesthetic features.

Quantities

Wall quantities for concrete walls usually consist of these items: concrete (retaining wall) or a class of concrete, reinforcement (retaining wall), structure excavation (retaining wall), structure backfill (retaining wall), pervious material (retaining wall), and architectural treatment (as needed).

Quantities should be tabulated on the plans for each wall.

Where the construction of more than one wall is shown on the road portion of the project plans, a cumulative quantity summary identifying quantities for the same wall types shall be included on the project summary of quantities sheets. If only one type of retaining wall is to be constructed on the project, then the wall quantities for that wall are only to be included with the retaining wall plans.

If the same type of wall with the same bid items are shown on the road portion and the structure portion of the project plans, include the following information on the wall quantity table for the road portion of the project:

- Add an asterisk in each column heading of the table which have bid items common to both road work and structure work
- Include a note on the wall summary of quantities sheet below the quantity table that reads:
 "*SEE STRUCTURE PLANS FOR
 ADDITIONAL QUANTITIES"

If the walls included in the project have been designed by both the district and the Office of Structure Design, care should be exercised in combining these wall quantities for the

Engineer's Estimate to make sure the bid items for the work are compatible.

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