Index 6011 C-I-P Gravity Wall

Design Criteria

AASHTO LRFD Bridge Design Specifications, 6th Edition; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

Index 6011 has been developed as a self-contained standard having pre-designed wall sections; therefore, no additional reinforcing list is required in the Contract Plans.

Gravity walls are generally most efficient when the difference in height between the ground levels is less than 5 feet. If the difference in height between ground levels is greater than 5 feet, other wall types or project specific designs are required.

Gravity wall design is based on the following soil criteria which covers the majority of soil types found in Florida:

Classification = Cohesion less (Fine Sand)

Friction Angle = 30 Degrees

Moist Unit Weight of Backfill = 120 lbs./cu. ft.

Presumptive Allowable Bearing Pressure:

= 2,500 psf for slopes equal to or flatter than 1:1½

= 3,300 psf for slopes steeper than 1: 1½.

Corrected SPT Blow Count for foundation = 10 blows/ft.

(average value within the range of depth from the base of wall to 2.0 x base width below wall).

Max. Seasonal High Water Table (SHWT) is one (1) foot below the horizontal ground surface at the toe of the wall, except as noted.

In cases where the Designer considers the soil at the specific site location to be of lesser strength, an analysis is required to verify that sliding, bearing, overturning and stability requirements are satisfied.

Overall stability of the wall shall be analyzed when the backfill slope exceeds 1:2 (vert.:horiz.) or the seasonal high water (SHW) is less than 2 ft. below the ground surface.

Stability of the slope above the top of the gravity wall shall be analyzed for slopes steeper than 1:2 (vert. : horiz.) with a minimum Factor of Safety = 1.3.

For Scheme 1 or Scheme 2, when a roadside barrier is required above the wall (guardrail, barrier wall, etc.) the deflection space required for the barrier must be considered. Locate the barrier so that there is no conflict between guardrail posts or barrier footing and the gravity wall or soil reinforcement. This may result in an offset greater than the minimum offset for the live load limit.

Plan Content Requirements

See ***PPM*** Vol. 1, Chapter 30 for more information.

In the Structures or Roadway Plans:

Add any aesthetic requirements (e.g. coordinating appearance of exposed surface with adjacent walls) to the General Notes.

Prepare Control Drawings containing the following information and include them in the plans:

Plan View*

1. Wall Location;
2. Begin/End Wall Stationing and Offset;
3. Offset definition, usually from the baseline to the front face of the wall;
4. Reference to "Index 6011 C-I-P Gravity Wall" and Wall Scheme (Scheme 1, Scheme 2 or Scheme 3) in accordance with that shown on the Design Standard.

Cross Sections (Roadway Plans only)

1. Base of Wall Elevation;
2. Existing Ground Line;
3. Proposed Ground Line;
4. Top of Wall Elevation;
5. Traffic Railing with Junction Slab (if Scheme 3 is required).

Elevation* (Wall Control Drawings)

1. Base of Wall Elevation at 25ft. intervals;
2. Existing Ground Line;
3. Proposed Ground Line Elevation;
4. Top of Wall Elevation at 25ft. intervals;
5. Top of Traffic Railing Elevation at 25ft. intervals (if Scheme 3 is required).

* Where Structures component of plan set is used, place these drawings in the Structures Plans, otherwise, include these drawings in the Roadway Plans. Elevation of wall may not be necessary for short walls or walls on constant grade.

Payment

Item number	Item description	Unit Measure
400-0-1	Concrete Class NS, Gravity Wall	CY

Commentary: See Instructions for Design Standards Index 6100 Series for Traffic Railing/Junction Slab Pay Items as required.

Commentary for Reviewers: Class NS Concrete - This class of concrete was determined to be appropriate for Index 6011 based on consultation with the Structures Design, Roadway Design, State Materials and Construction Offices in 2005 during the LRFD redesign. This class of concrete is an economical choice and structurally appropriate for a non-flexural (gravity) earth retention system.