Index 400-010 Cantilever Retaining Wall (C-I-P)

Design Criteria

AASHTO LRFD Bridge Design Specifications; ***Structures Design Guidelines (SDG), FDOT Design Manual (FDM)***

Design Assumptions and Limitations

Use this standard with Indexes in the 521-600 Series as appropriate.

The Retaining Wall Standard Drawings consist of ***Standard Plans*** Index 400-010 and companion Data Tables located in the FDOT Structures Bar Menu as MicroStation CADD cells. These Standard Plan Indexes are intended to work in conjunction with each other and the LRFD Retaining Wall Program, developed by the Structures Design Office.

Design assumptions used in the development of the Standard Drawings may be found in 'Retaining Wall Notes' within the Program. Indexes and Program are intended for C-I-P cantilever retaining walls only, not abutments. At a minimum the EOR should consider the applicability of the following: overall stability, settlement and seismic loading.

The Engineer of Record (EOR) shall be responsible for the Retaining Wall Design in its entirety. The EOR should complete and/or alter the Index drawings to suit the particular design. The EOR should consider the appropriateness of the use of the Standard and Program if the particulars of the design conflict significantly with the assumptions used in the development of the Standards.

These Indexes are intended to work in conjunction with Retaining Wall Control Drawings located within the Plans. The Control Drawings should define geometrics, locations and other specifics of the Retaining Wall such that when used in conjunction with the Index, the Contractor has sufficient information for construction.

Table 400-010-1 Durability Requirements for Applicable FDOT Wall Type

Applicable FDOT Wall Types	Durability Requirements			
	Concrete Cover (in) Carbon Steel*	Concrete Cover (in.) (FRP)**	Concrete Class	Pozzolan Additions (Y/N)***
Type 1A	2	2	II	No
Type 1B	2	2	IV	No
Type 1C	3	2	IV	No
Type 1D	3	2	IV	Yes

* SDG 1.4.2-1

** Structures Manual Volume 4 2.3E

***Pozzolan additions are not required for FRP reinforced retaining walls

Plan Content Requirements

Prepare and include in the plans all Wall Control Drawings and related drawings as specified in ***SDM*** Chapter 19 and ***FDM*** 262.

The Program outputs five text files:

- retwall_line1.txt
- retwall_line2.txt
- retwall_line3.txt
- retwall_line4.txt
- retwall_line5.txt –use data to calculate concrete and reinforcing steel quantities.

Text files for lines 1-4 correspond sequentially to the four Retaining Wall Data tables contained in the companion Data Tables for Index 400-010. Complete these data tables using the four text files and include the Data Tables in the plans. The text files can be inserted into the tables by using the ‘Include’ Key-In Utility in MicroStation at the active points in each table. True Type Font, ‘FDOT Mono’ must be used to align inserted text with table columns.

Complete and add/modify/delete the Retaining Wall Data Table Notes as necessary. If enhanced aesthetics are required, include drawing or reference a texture from Index 534-200 in the Retaining Wall Notes.

See ***FDM*** 115 for more information regarding use of Data Tables

C-I-P CANTILEVER RETAINING WALLS DATA TABLES

WALL DIMENSIONS — Table Date 01-01-11

Wall No.	Begin		End		Height				Wall Length		D	W	L_{foot}		L_{toe}		Slope Bkwall	D_{soil}		L_{key}	D_{key}	V_{step}	Wall Cover	FtgCov (typ.)	FtgCov (bot.)
	Station	Offset	Station	Offset	Begin		End																		
					ft.	in.	ft.	in.	ft.	in.	in.	in.	ft.	in.	ft.	in.		ft.	in.	in.	in.	in.	in.	in.	in.

BILL OF REINFORCING STEEL — Table Date 01-01-11

Wall No.	Bars J											Bars K											Bars M							
	Size	No.	Spacing	A				B		Average Total Length		Size	No.	Spacing	A				B		Average Total Length		Size	No.	A		B		Total Length	
				Begin		End									Begin		End													
			in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.			in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.			ft.	in.	ft.	in.	ft.	in.

BILL OF REINFORCING STEEL — Table Date 01-01-11

Wall No.	Bars H					Bars G1						Bars R				Bars Z					Bars A						
	Size	No.	Spacing	Length		Size	No.	Spacing	No. of Lap Splices	Total Length		Size	No.	Length		Size	No.	Spacing	Length		Size	No.	Length			Average Length	
																							Begin		End		
			in.	ft.	in.			in.		ft.	in.			ft.	in.			in.	ft.	in.			ft.	in.	ft.	in.	ft.	in.

BILL OF REINFORCING STEEL — Table Date 01-01-11

Wall No.	Bars F								Bars G2				Bars D			
	Size	No.	Spacing	Length				Average Length	Size	No.	Length		Size	No.	Length	
				Begin		End										
			in.	ft.	in.	ft.	in.	ft.	in.			ft.	in.			ft.	in.

NOTES [Notes Date 07-01-14]:

1. Work these Data Tables with Index No. 6010.
2. Concrete Class _____ (f'c = _____ psi) with/without silica fume, metakaolin or ultrafine fly ash.
3. Wall exposed face surface texture shall be _____
4. Environmental Classification is _____.
5. Minimum Soil Nominal Bearing Resistance = _____ psf.
6. A value of '0' for Slope Backwall indicates front and back of wall are parallel.
7. D_{soil} is typical depth of soil and is used for design purposes only. See Control Drawings for actual ground line.
8. Non-zero values for L_{key} and D_{key} indicate the existence of a shear key.
9. A non-zero value for V_{step} indicates the existence of a footing step, see Control Drawings for location.
10. Bars J, K, A and F vary uniformly between begin and end wall heights as indicated by begin and end dimensions.
11. The number of G1 Bars includes 2 additional bars when a shear key is specified.
12. For walls with variable begin/end height, Bars G2 shall be fanned such that they are evenly spaced throughout length of wall.

Payment:

Item number	Item Description	Unit Measure
400-2-11	Concrete Class II, Retaining Wall	CY
400-4-11	Concrete Class IV, Retaining Wall	CY
415-1-3	Reinforcing Steel –Retaining Wall	LB
415-10-AA	Fiber Reinforced Polymer Bars	LF

Commentary: Retaining Wall quantities shall not include concrete or reinforcing for Index 521-600 Series Concrete Barriers/Junction Slabs. See Standard Plans Instructions Index 521-600 Series for Concrete Barrier/Junction Slab Pay Items as required.

*Refer to **FDM** 902 for guidance on the Estimated Quantities Report.*