# CAST-in-place Gravity RETAINING WALLS (3-17-15)

## General

Construct cast-in-place (CIP) gravity retaining walls consisting of CIP concrete supported by and connected to concrete footings. Construct CIP gravity retaining walls based on actual elevations and wall dimensions in accordance with the contract, accepted submittals and if included in the plans, Standard Detail No. 453.01. Define “CIP gravity wall” as a CIP gravity retaining wall.

## Materials

### Refer to Division 10 of the *Standard Specifications*.

|  |  |
| --- | --- |
| **Item** | **Section** |
| Curing Agents | 1026 |
| Geotextiles, Type 1 | 1056 |
| Joint Materials | 1028 |
| Masonry | 1040 |
| Portland Cement Concrete, Class A | 1000 |
| Reinforcing Steel | 1070 |
| Subdrain Coarse Aggregate | 1044-2 |
| Subdrain Fine Aggregate | 1044-1 |

Use geotextiles and subdrain aggregate for subsurface drainage at weep holes and reinforcing steel for dowels.

## CIP Gravity Wall Surveys

The plans typically show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each CIP gravity wall. Before beginning CIP gravity wall construction, survey existing ground elevations along wall face locations and other elevations in the vicinity of CIP gravity wall locations as needed. For proposed slopes above or below CIP gravity walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual CIP gravity wall dimensions and details, submit wall envelopes for acceptance. Use accepted wall envelopes for construction.

## Construction Methods

Control drainage during construction in the vicinity of CIP gravity walls. Direct run off away from CIP gravity walls and backfill. Contain and maintain backfill and protect material from erosion.

Excavate as necessary for CIP gravity walls in accordance with the plans. Unless required otherwise in the plans, embed bottom of footings at least 2 ft below bottom of walls shown in the plans. If applicable and at the Contractor’s option, use temporary shoring for wall construction instead of temporary slopes to construct CIP gravity walls. Define “temporary shoring for wall construction” as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor’s convenience.

Notify the Engineer when foundation excavation is complete. Do not place concrete for footings until excavation depth and foundation material are approved.

Construct CIP gravity walls at elevations and with dimensions shown in the plans and in accordance with Section 420 of the *Standard Specifications*. Use dowels for construction joints at top of footings as shown in the plans. Extend top of walls at least 6" above where finished grade intersects back of CIP gravity walls.

Unless required otherwise in the plans, provide a Class 2 surface finish for exposed surfaces of CIP gravity walls that meets Subarticle 420-17(F) of the *Standard Specifications*. Construct wall joints at a spacing of 10 ft to 12 ft unless required otherwise in the plans. Make 1/2" thick expansion joints that meet Article 420-10 of the *Standard Specifications* for every third joint and 1/2" deep grooved contraction or sawed joints that meet Subarticle 825-10(B) or 825-10(E) respectively of the *Standard Specifications* for the remaining joints.

Construct 3" diameter weep holes on 10 ft centers along CIP gravity walls. Provide subsurface drainage at weep holes in accordance with Article 414-8 of the *Standard Specifications*. Exit weep holes just above finished grade and slope holes at 1" per foot through CIP gravity walls so water drains out of front of walls. When single faced precast concrete barrier is required in front of and against CIP gravity walls, extend weep holes through barrier at the same slope.

Do not remove forms or backfill behind CIP gravity walls until concrete attains a compressive strength of at least 2,400 psi. Backfill for CIP gravity walls in accordance with Article 410-8 of the *Standard Specifications*.

If a brick veneer is required, construct brick masonry in accordance with Section 830 of the *Standard Specifications*. Anchor brick veneers to CIP gravity walls with approved brick to concrete type anchors in accordance with the manufacturer’s instructions. Space anchors no more than 16" apart in the vertical direction and no more than 32" apart in the horizontal direction with each row of anchors staggered 16" from the row above and below.

## Measurement and Payment

*CIP Gravity Retaining Walls* will be measured and paid in square feet. CIP gravity walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of footing elevations. Define “top of wall” as top of CIP concrete.

The contract unit price for *CIP Gravity Retaining Walls* will be full compensation for providing submittals, labor, tools, equipment and CIP gravity wall materials, excavating, backfilling, hauling and removing excavated materials and supplying concrete, dowels, subsurface drainage, weep holes and any incidentals necessary to construct CIP gravity walls. The contract unit price for *CIP Gravity Retaining Walls* will also be full compensation for brick veneers, if required.

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *CIP Gravity Retaining Walls*.

The contract unit price for *CIP Gravity Retaining Walls* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with CIP gravity walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **Pay Item** |  | **Pay Unit** |
| CIP Gravity Retaining Walls | | Square Foot |



**PE SEAL NAME**

**PE #**