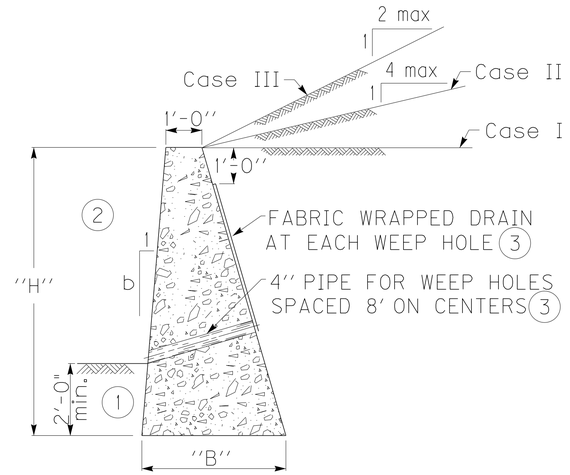
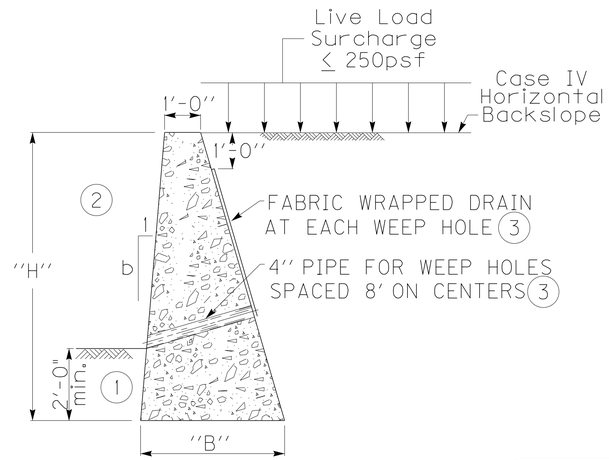
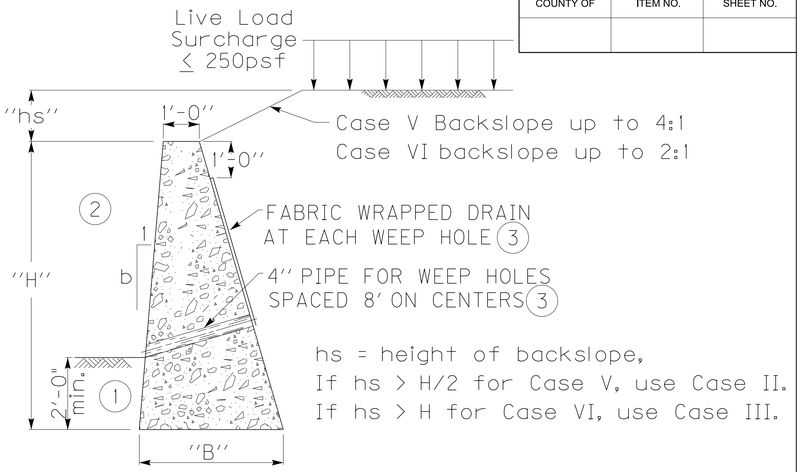
COUNTY OF	ITEM NO.	SHEET NO.



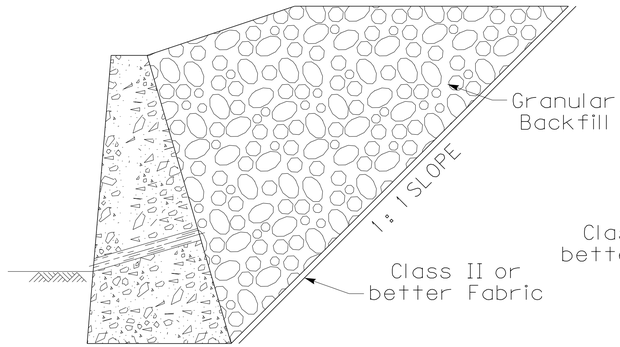
CASES I, II, AND III



CASE IV

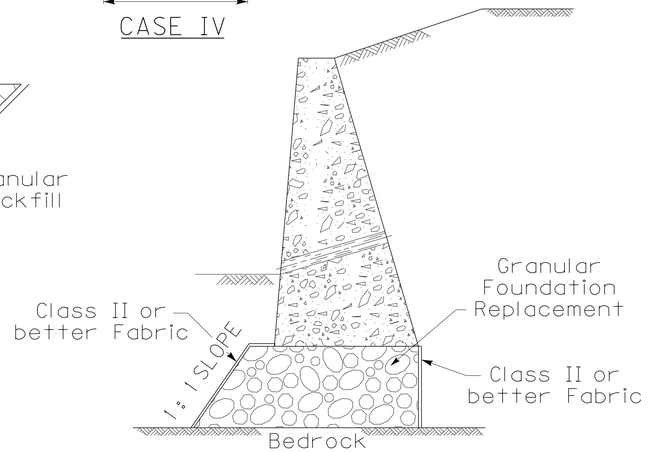


CASES V AND VI

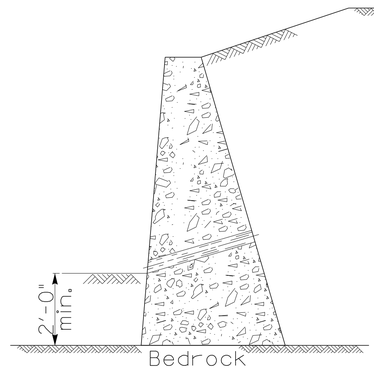


GRANULAR BACKFILL

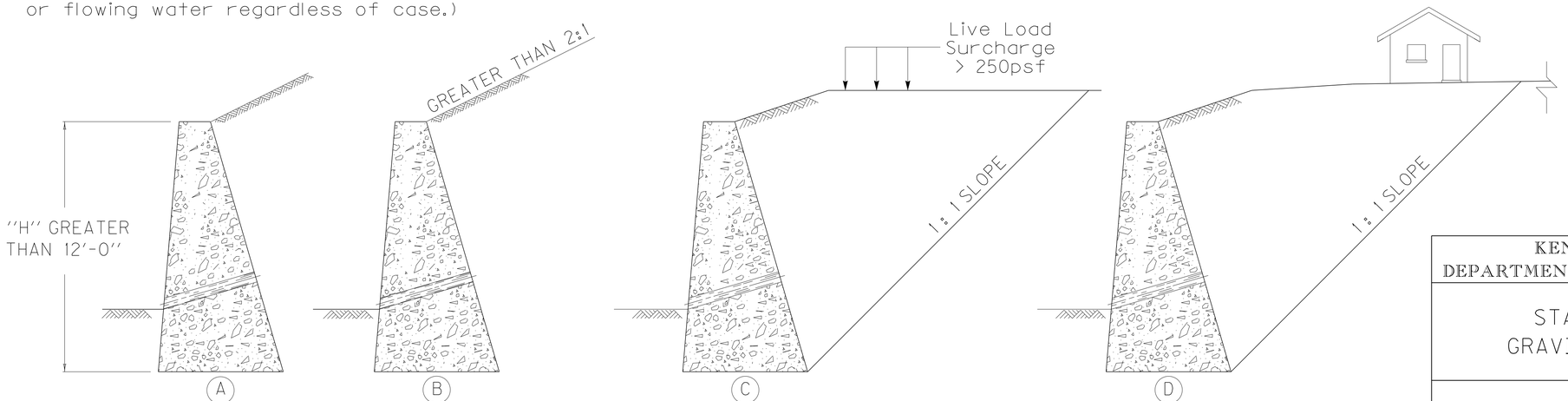
(Required if wall is subject to standing or flowing water regardless of case.)



GRANULAR FOUNDATION REPLACEMENT



BEARING ON BEDROCK



SPECIAL DESIGNS REQUIRED

KENTUCKY
DEPARTMENT OF HIGHWAYS

STANDARD
GRAVITY WALL

SUBMITTED _____ 7-08-19
DIRECTOR DIVISION OF STRUCTURAL DESIGN — DATE

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STANDARD GRAVITY WALL NOTES

The retaining walls depicted on these drawings shall be used when the height (H) of the wall is 12'-0" or less provided the following conditions are met:

Case I - Wall backfill slopes down, is level, or slopes up from wall at 20H:1V or flatter slope. This low slope allows for backfills that would be level except for the slope required to facilitate proper drainage.
Case II - Backfill slopes steeper than 20H:1V but no more than 4H:1V.
Case III - Backfill slopes steeper than 4H:1V but no more than 2H:1V.
Case IV - Backfill slopes down, is level, or slopes up from wall at 20H:1V or flatter slope (as needed to facilitate proper drainage) and has a maximum live load surcharge of 250 pounds per square foot applied behind the wall.
Case V - Broken-back backfill slopes no more than 4H:1V to a level surface (except for slope needed to facilitate proper drainage) and has a maximum live load surcharge of 250 pounds per square foot applied to the level portion of the backfill. If the height of the backfill to the slope break equals or exceeds one-half the height of the wall (hs => H/2), use Case II.
Case VI - Broken-back backfill slopes up steeper than 4H:1V but no more than 2H:1V to a level surface (except for slope needed to facilitate proper drainage) and has a maximum live load surcharge of 250 pounds per square foot applied to the level portion of the backfill. If the height of the backfill to the slope break equals or exceeds the height of the wall (hs => H), use Case III.

Special Designs shall be required when the following conditions exist:
Ⓐ Wall height is greater than 12'-0".
Ⓑ Backfill slopes are steeper than 2H:1V.
Ⓒ The wall is surcharged with a live load exceeding 250 pounds per square foot within the limits of a 1:1 slope extending from the base of the wall.
Ⓓ The wall is surcharged with a dead load (i.e., buildings, structures, or other permanent facilities) within the limits of a 1:1 slope extending from the base of the wall.

① Minimum embedment value is 2'-0" for all cases.

② Batter (b) shall be as follows:
Cases I, II a, and II b - For H < 10'-0" use 12V:1H. For H => 10'-0" use 6V:1H.
Case III - For H < 7'-0" use 12V:1H. For H=> 7'-0" use 6V:1H.
Cases IV, V a, V b, and VI - For H < 6'-0" use 12V:1H. For H=> 6'-0" use 6V:1H.

③ Fabric wrapped drains and 4" pipe for weep holes shall be included in the unit price bid for gravity type retaining walls.

Granular backfill, granular foundation replacement to bedrock, or a wall bearing directly on competent un-weathered bedrock is required for the following cases:
Case II b for H > 9.5'
Case III - for H > 8'
Case V b for H > 10.5'
Case VI for H > 9'

Walls subject to standing or flowing water (adjacent to streams, rivers, ponds, lakes, rivers, detention basins, etc.) shall have granular backfill meeting the requirements below regardless of the Case.

Granular backfill or granular foundation replacement to bedrock (when required) shall meet the requirements of "Granular Embankment" in Section 805 of the Standard Specifications, current edition, except that the maximum size is 4 inches with a minus No. 200 content not exceeding 5.0 percent. Use material that classified as non-erodible, as defined in Section 805 of the Standard Specifications, current edition. Gravels or sands, crushed or uncrushed, shall not be allowed. Place Class II or better Geotextile Fabric in accordance with Sections 214 and 843 of the Standard Specifications, current edition, as shown below, where there is a soil-granular material interface.

	Required base width, B(ft)								
	H(ft)	Case I	Case II a	Case II b	Case III	Case IV	Case V a	Case V b	Case VI
	3.0	1.50	1.50	1.50	1.50	3.00	3.00	3.00	3.25
	3.5	1.75	1.75	1.75	1.75	3.25	3.25	3.25	3.50
	4.0	2.00	2.00	2.00	2.00	3.50	3.50	3.50	3.75
	4.5	2.25	2.25	2.25	2.25	3.75	4.00	4.00	4.25
	5.0	2.50	2.50	2.50	2.50	4.00	4.25	4.25	4.50
	5.5	2.75	2.75	2.75	2.75	4.25	4.50	4.50	4.75
	6.0	3.00	3.00	3.00	3.00	4.50	4.75	4.75	5.00
	6.5	3.25	3.25	3.25	3.25	4.75	5.00	5.00	5.50
	7.0	3.50	3.50	3.50	3.50	5.00	5.50	5.50	5.75
	7.5	3.75	3.75	3.75	3.75	5.25	5.75	5.75	6.00
	8.0	4.00	4.00	4.00	4.00	5.75	6.00	6.00	6.50
	8.5	4.25	4.25	4.25	4.25*	6.00	6.25	6.25	6.75
	9.0	4.50	4.50	4.50	4.50*	6.25	6.50	6.50	7.00
12:1 Batter	9.5	4.75	4.75	4.75	4.75*	6.50	6.75	6.75	7.25*
6:1 Batter	10.0	5.00	5.25	5.00*	5.00*	6.75	7.00	7.00	7.50*
	10.5	5.25	5.50	5.25*	5.25*	7.00	7.25	7.25	7.75*
	11.0	5.50	5.75	5.50*	5.50*	7.25	7.75	7.50*	8.25*
	11.5	5.75	6.00	5.75*	5.75*	7.50	8.25	7.75*	8.50*
	12.0	6.00	6.25	6.00*	6.00*	7.75	8.75	8.00*	9.00*

12:1 Batter
6:1 Batter

* Requires Granular Backfill, Granular Foundation repalcement to bedrock, or bearing directly on competent unweathered bedrock.

DESIGN PARAMETERS

Large block retaining walls without reinforced backfill are suitable alternatives to Standard Gravity Walls. Approved large block retaining wall suppliers can be found on the Structural Design web site. Contractors shall submit to the Engineer for review and approval a design for a large block wall alternative using the following design parameters unless site-specific geotechnical information is provided. The wall design shall be in accordance with the AASHTO Standard Specifications for Highway Bridges, current edition.

Soil Backfill	$c' = 0$ psf, $\phi' = 28°$, $\gamma = 120$ pcf
Foundation	$c = 1200$ psf, $\phi = 0°$, $\gamma = 120$ pcf
Granular backfill or foundation replacement	$c' = 0$, $\phi' = 38°$, $\gamma = 115$ pcf

Pay Items

Concrete, Class B	Cu. Yd.
Structure Excavation	Cu. Yd.
Granular Embankment (when required)	Cu. Yd.
Geotextile Fabric (when required)	Sq. Yd.

KENTUCKY
DEPARTMENT OF HIGHWAYS

STANDARD
GRAVITY WALL

SUBMITTED _____ 7-08-19
DIRECTOR DIVISION OF STRUCTURAL DESIGN — DATE

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