

**ROCKERY WITH PAVED DITCH  
TYPICAL SECTION**

**NOTE:**

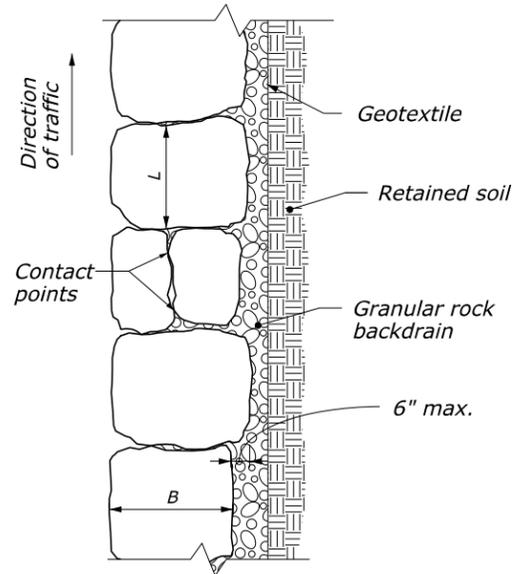
1. Construct rockery and place base, facing, and cap rocks according to Section 252 of the SCRs. Place each rock individually by equipment suitable for lifting, manipulating, and placing rocks of the size and shape specified. Ensure that each rock is firmly set and supported by underlying materials and adjacent rocks. Reposition or replace loose rocks.
2. A maximum tolerance of 6 inches may be applied toward the total base rock width. Use rock with minimum L of 5 feet 6 inches. Do not consecutively place base rocks with widths less than B.
3. Place base, facing, and cap rocks so that their height dimension is not greater than their width. The longest dimension of the base, facing, and cap rocks is parallel to face of rockery.
4. Where loose, soft, or otherwise unsuitable foundation soil conditions are encountered, contact the CO for supplemental recommendations.
- ⑤ Discharge outlet pipes to a protected outlet or other permanent drainage structure at low points in the rockery and at 100 feet (max.) spacing.
6. Do not construct rockeries or slopes exceeding the heights shown on the Rockery Design Table without prior written approval by the CO.
7. Construct rockeries parallel to curb grade unless otherwise noted.

ROCKERY DESIGN TABLE							
STATION		LT/RT TIER	MAX. HEIGHT H (ft)	MIN. BASE ROCK WIDTH B (ft)	MAX. CUT <sup>(A)</sup> SLOPE BATTER V:H	MIN. ROCK WEIGHT (lb)	
BEGIN	END					CAP ROCK	BASE ROCK

**Rockery Design Data:**

Friction angle,  $\phi = \text{---}^\circ$   
 Cohesion,  $c = 0$   
 Bulk unit weight,  $\gamma_R = 149.7 \text{ lbf/ft}^3$   
 Allowable bearing pressure =  $\text{---} \text{ lbf/ft}^2$

(A) Maximum cut slope batter for design purposes only. Actual cut slope batter may be flatter.

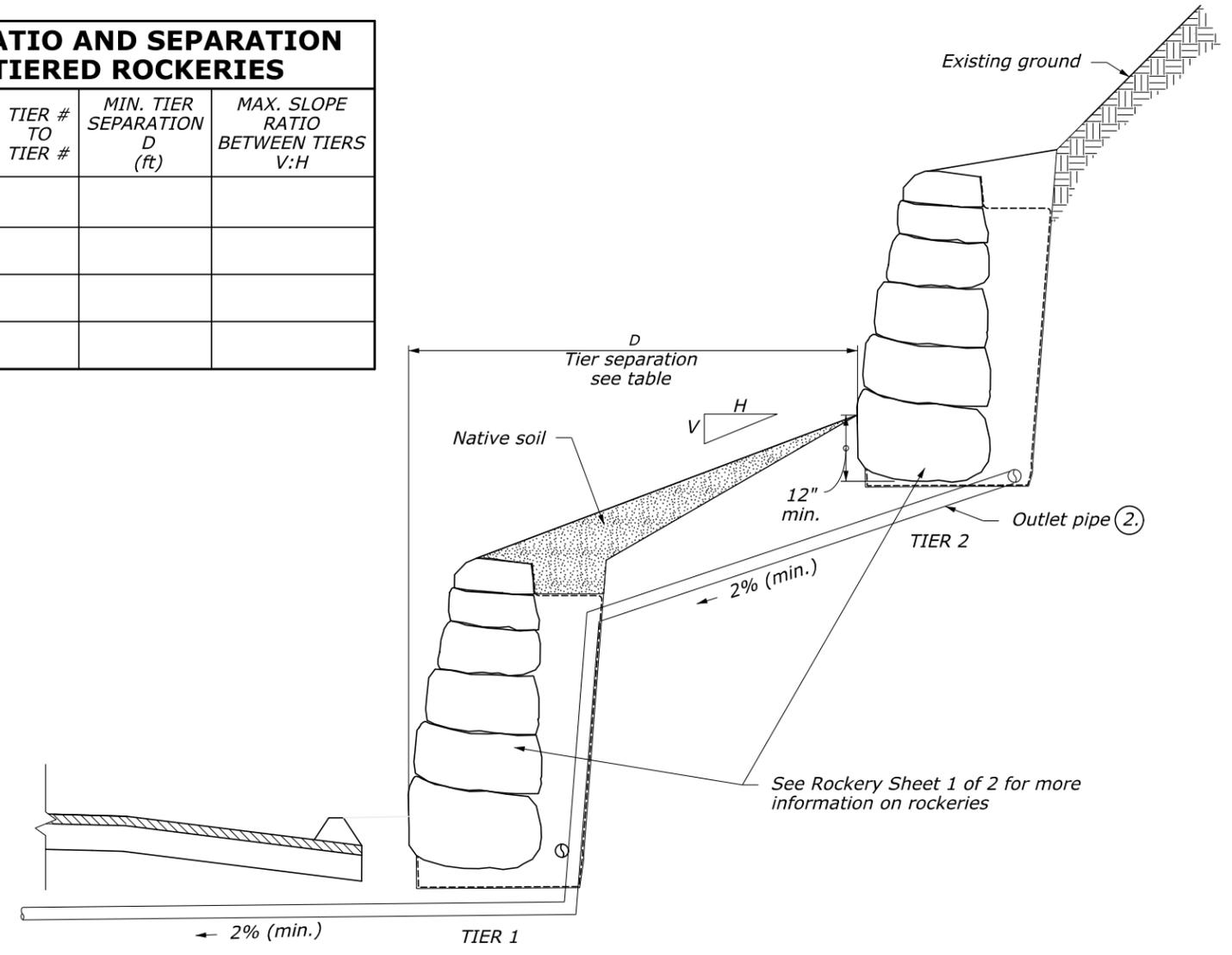


**BASE ROCK  
PLAN VIEW**  
See Note 2

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY SPECIAL	
<b>ROCKERY</b>	
Sheet 1 of 2	
NO SCALE	SPECIAL 252-A

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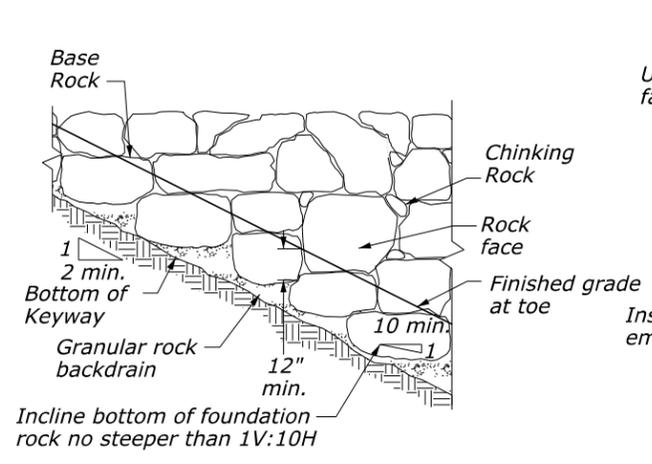
SLOPE RATIO AND SEPARATION FOR TIERED ROCKERIES				
STATION		TIER # TO TIER #	MIN. TIER SEPARATION D (ft)	MAX. SLOPE RATIO BETWEEN TIERS V:H
BEGIN	END			



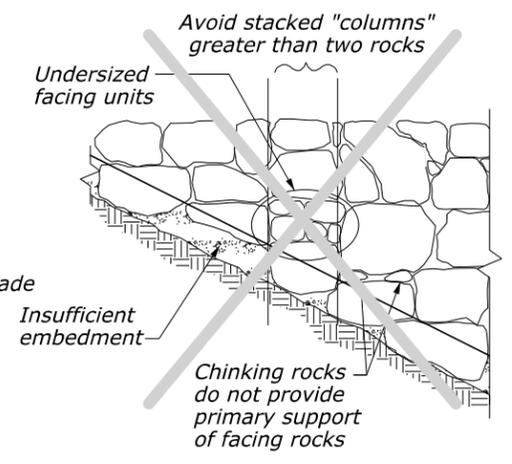
**NOTE:**

1. See Rockery Sheet 1 of 2.
2. Install 4 inch diameter non-perforated outlet pipe at low points in the rockery and at 100 feet (max.) spacing. Do not connect to drainage system for lower tier. Drainage systems for the upper and lower tiers outlet independently.
3. Place rocks according to Subsection 252.03(d) of the SCRs.

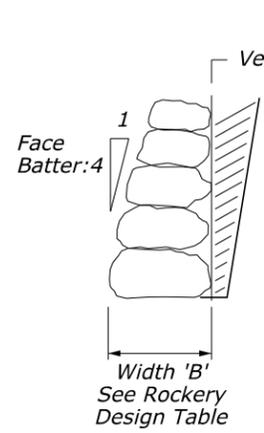
**ROCKERY WITH TIERS  
TYPICAL SECTION**



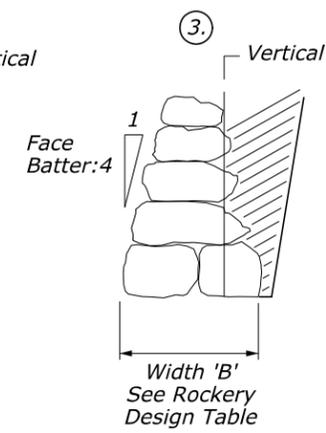
**CORRECT  
PARTIAL TYPICAL PROFILE**



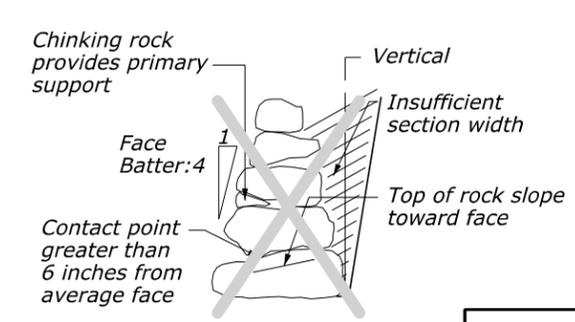
**INCORRECT**



**CORRECT**



**CORRECT**



**INCORRECT**

**SECTION PROPERTIES**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY SPECIAL	
<b>ROCKERY</b>	
Sheet 2 of 2	
	SPECIAL 252-A

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## NOTES TO THE DESIGNER

Last Updated: April 2011

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### General Information

1. **Project-Specific Information.**

- a. The typical section shown on Sheet 1 includes a rockery with paved ditch. Typical sections with other ditch types are shown above the drawing – use the typical sections that fit your project.
- b. Coordinate with Geotech to fill in the information in the Rockery Design Table.
- c. Even if you don't have tiers on your project, you will still need the 'Partial Typical Profile' and 'Section Properties' drawings located on the second sheet.

2. **Existing Ground Above the Rockery.** If the existing ground slope is steeper than 1:1 above the rockery, coordinate with Geotech (may need to include a concrete v-ditch along the top of the rockery).

3. **Design Guide.** Rockery Design and Construction Guidelines are available at [http://www.cflhd.gov/techDevelopment/completed\\_projects/geotech/rockeries/](http://www.cflhd.gov/techDevelopment/completed_projects/geotech/rockeries/)

4. **Rockery Layout Procedures.** The CFLHD Rockery Layout Procedure Manual is available at [http://www.cflhd.gov/design/documents/technical\\_guides/Rockery\\_layout\\_manual.pdf](http://www.cflhd.gov/design/documents/technical_guides/Rockery_layout_manual.pdf)

This guide describes the procedures for using GEOPAK to show the rockery design in the cross sections.

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### Applicable SCRs

1. Section 252:  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S252-03E.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S252-03E.doc)
2. Subsection 703.03 (granular rock backdrain):  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S703-03E.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S703-03E.doc)
3. Subsection 705.07 (rock for rockeries):  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S705-03E.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S705-03E.doc)
4. Subsection 714.01 (geotextile):  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S714-03E.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S714-03E.doc)

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### Typical Pay Items Used

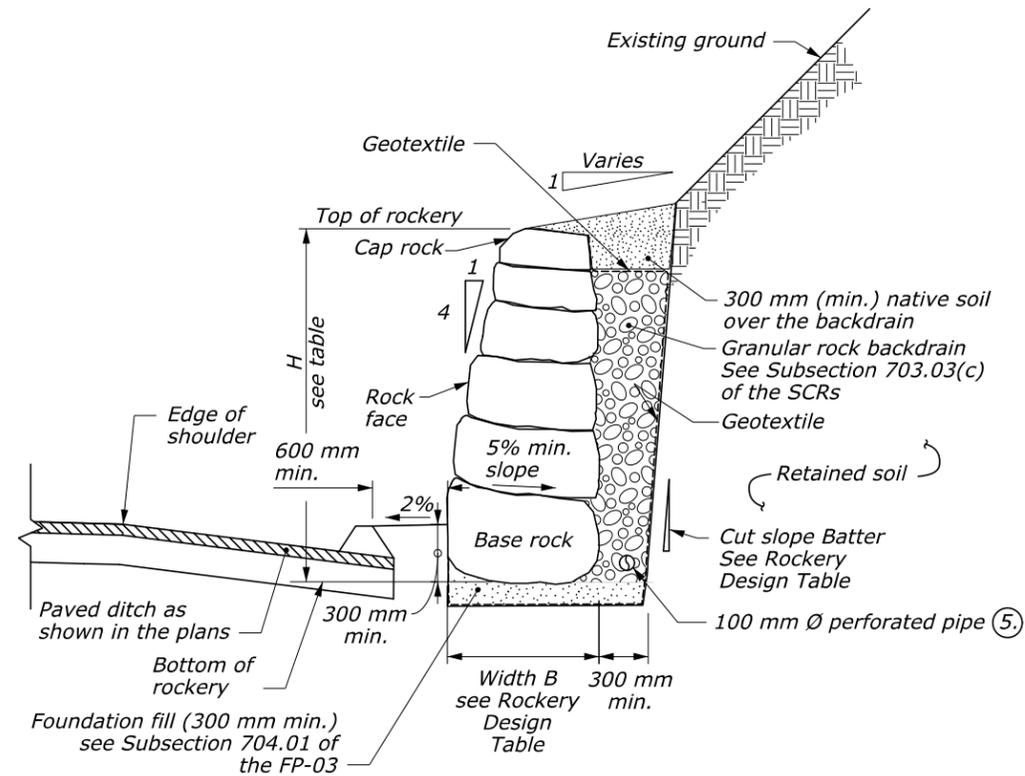
- 25210-0000 Rockery
- Other items, including structure excavation, foundation fill, granular rock backdrain, and 4-inch drain pipes, are considered incidental (need to show estimated quantities for information only in the rockery summary table on the B sheets)

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### Updates

September 2008 - Incorporated comments after SCR Team review

April 2011 - Revised slope above rockery from 1:6 to 1:varies to match GEOPAK criteria



**ROCKERY WITH PAVED DITCH  
TYPICAL SECTION**

**NOTE:**

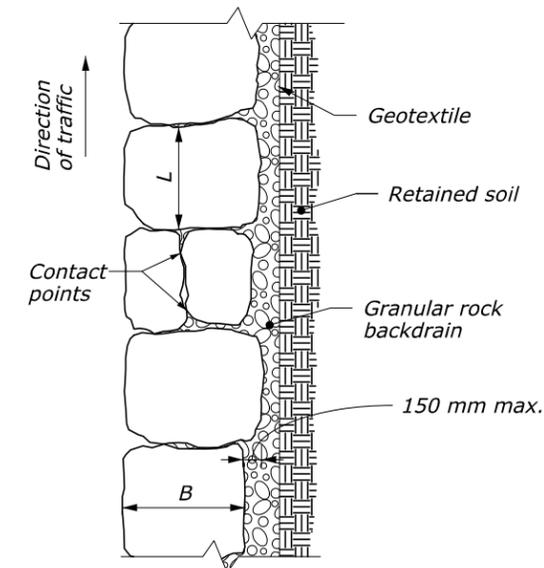
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2. A maximum tolerance of 150 mm may be applied toward the total base rock width. Use rock with minimum L of 1.7 m. Do not consecutively place base rocks with widths less than B.
3. Place base, facing, and cap rocks so that their height dimension is not greater than their width. The longest dimension of the base, facing, and cap rocks is parallel to face of rockery.
4. Where loose, soft, or otherwise unsuitable foundation soil conditions are encountered, contact the CO for supplemental recommendations.
5. Discharge outlet pipes to a protected outlet or other permanent drainage structure at low points in the rockery and at 30 m (max.) spacing.
6. Do not construct rockeries or slopes exceeding the heights shown on the Rockery Design Table without prior written approval by the CO.
7. Construct rockeries parallel to curb grade unless otherwise noted.

ROCKERY DESIGN TABLE							
STATION		LT/RT TIER	MAX. HEIGHT H (m)	MIN. BASE ROCK WIDTH B (m)	MAX. CUT SLOPE BATTER V:H (A)	MIN. ROCK WEIGHT (kg)	
BEGIN	END					CAP ROCK	BASE ROCK

**Rockery Design Data:**

Friction angle,  $\phi = \text{---}^\circ$   
 Cohesion,  $c = 0$   
 Bulk unit weight,  $\gamma_R = 23.5 \text{ kN/m}^3$   
 Allowable bearing pressure =  $\text{---} \text{ KPa}$

(A) Maximum cut slope batter for design purposes only. Actual cut slope may be flatter.

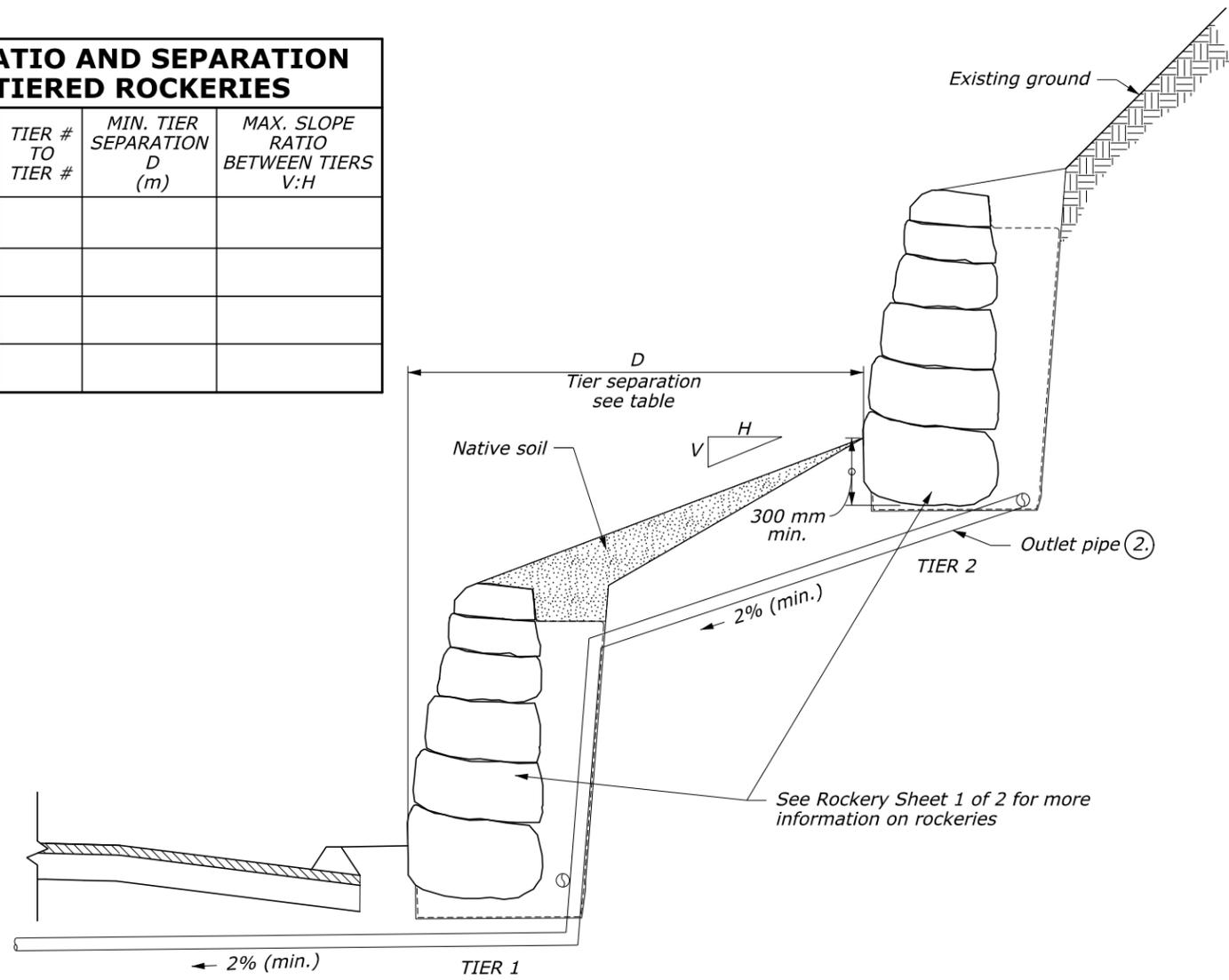


**BASE ROCK  
PLAN VIEW**  
See Note 2

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
METRIC SPECIAL	
<b>ROCKERY</b>	
Sheet 1 of 2	
	SPECIAL M252-A

NO SCALE

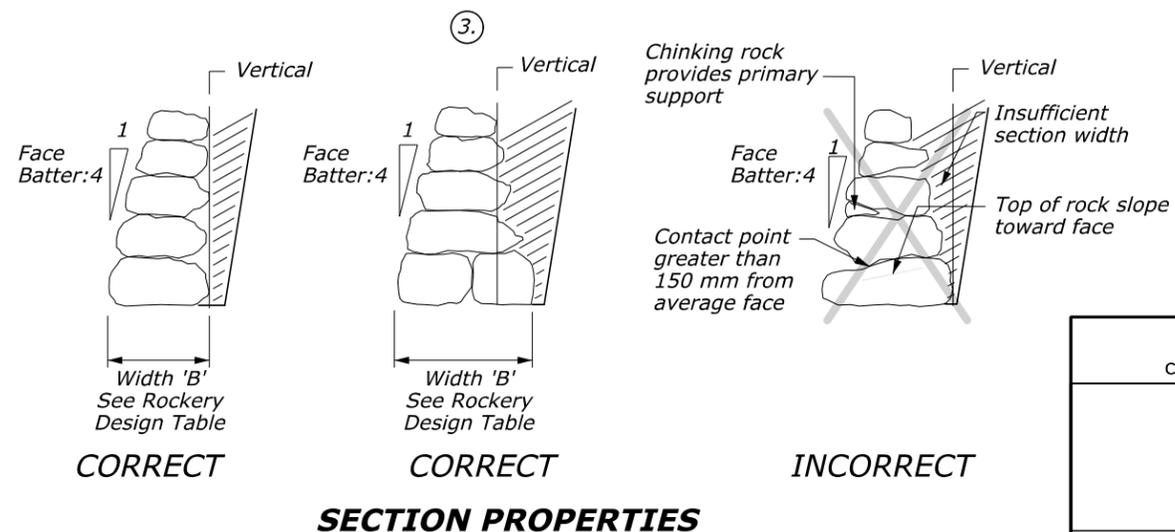
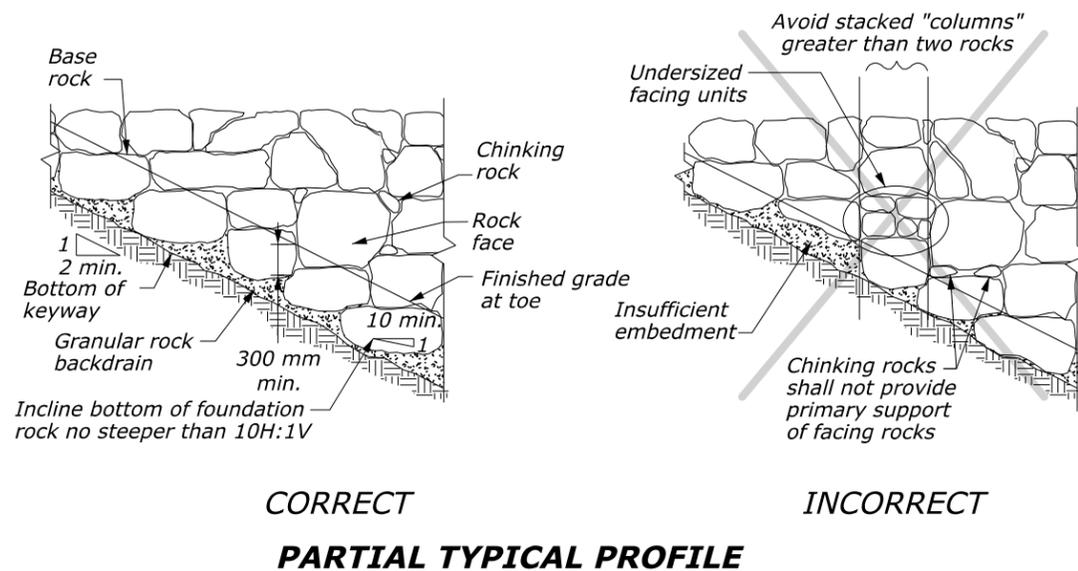
SLOPE RATIO AND SEPARATION FOR TIERED ROCKERIES				
STATION		TIER # TO TIER #	MIN. TIER SEPARATION D (m)	MAX. SLOPE RATIO BETWEEN TIERS V:H
BEGIN	END			



**NOTE:**

1. See Rockery Sheet 1 of 2.
2. Install 100 mm diameter non-perforated outlet pipe at low points in the rockery and at 30 m (max.) spacing. Do not connect to drainage system for lower tier. Drainage systems for the upper and lower tiers outlet independently.
3. Place rocks according to Subsection 252.03(d) of the SCRs.

**ROCKERY WITH TIERS  
TYPICAL SECTION**



NO SCALE

## NOTES TO THE DESIGNER

Last Updated: April 2011

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### General Information

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2. **Existing Ground Above the Rockery.** If the existing ground slope is steeper than 1:1 above the rockery, coordinate with Geotech (may need to include a concrete v-ditch along the top of the rockery).

3. **Design Guide.** Rockery Design and Construction Guidelines are available at [http://www.cflhd.gov/techDevelopment/completed\\_projects/geotech/rockeries/](http://www.cflhd.gov/techDevelopment/completed_projects/geotech/rockeries/)

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### Applicable SCRs

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[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S252-03M.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S252-03M.doc)
2. Subsection 703.03:  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S703-03M.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S703-03M.doc)
3. Subsection 705.07:  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S705-03M.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S705-03M.doc)
4. Subsection 714.01:  
[http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr\\_03/S714-03M.doc](http://www.cflhd.gov/resources/design/constructspecs/scr/documents/scr_03/S714-03M.doc)

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### Typical Pay Items Used

- 25210-0000 Rockery m2
- Other items, including structure excavation, foundation fill, granular rock backdrain, and 4-inch drain pipes, are considered incidental (need to show estimated quantities for information only in the rockery summary table on the B sheets)

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### Updates

September 2008 - Incorporated comments after SCR Team review

April 2011 – Revised slope above rockery from 1:6 to 1:varies