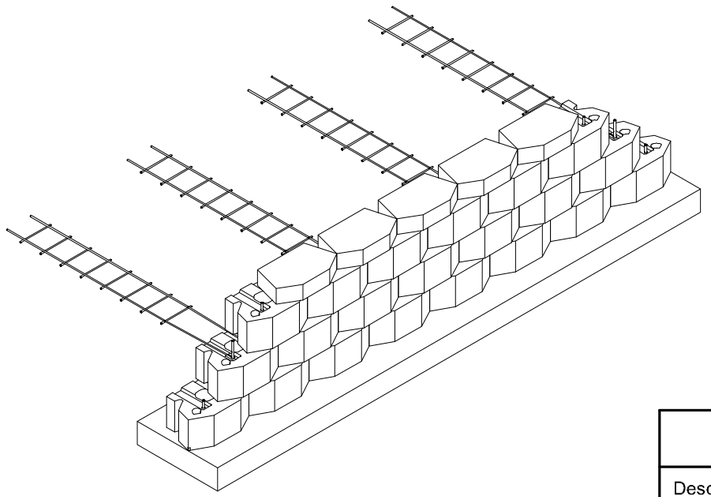
# Keystone Retaining Wall Systems
# Keysystem I Details



Tri-Planer Split Face Treatment

| DRAWING INDEX | |
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| Keysystem I Unit & Keystrip Details | Sheet 3 |
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| Keysystem I Wall Backfill Procedure Details | Sheet 11 |
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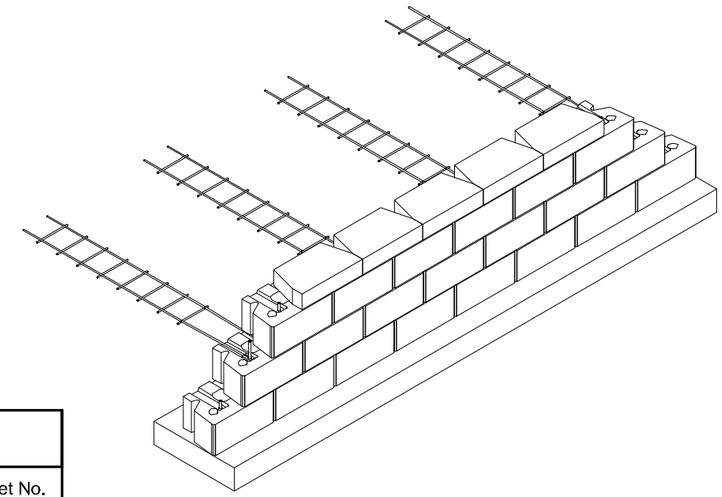

Straight Split Face Treatment



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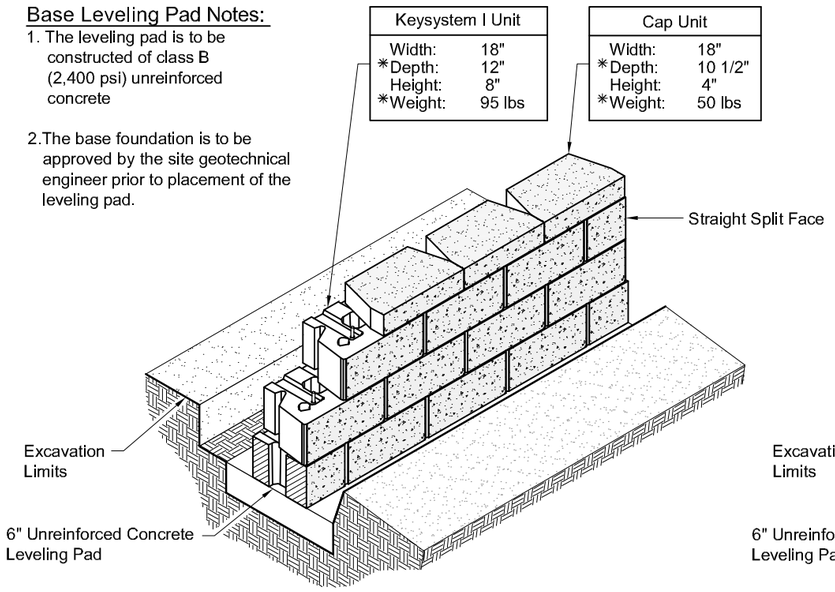
| | | |
|---|---|---|
| Designed By: RKM | Title: Title Sheet | Date: 05/2010 |
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details | Drawing No: 1 |
| Scale: No Scale | | |

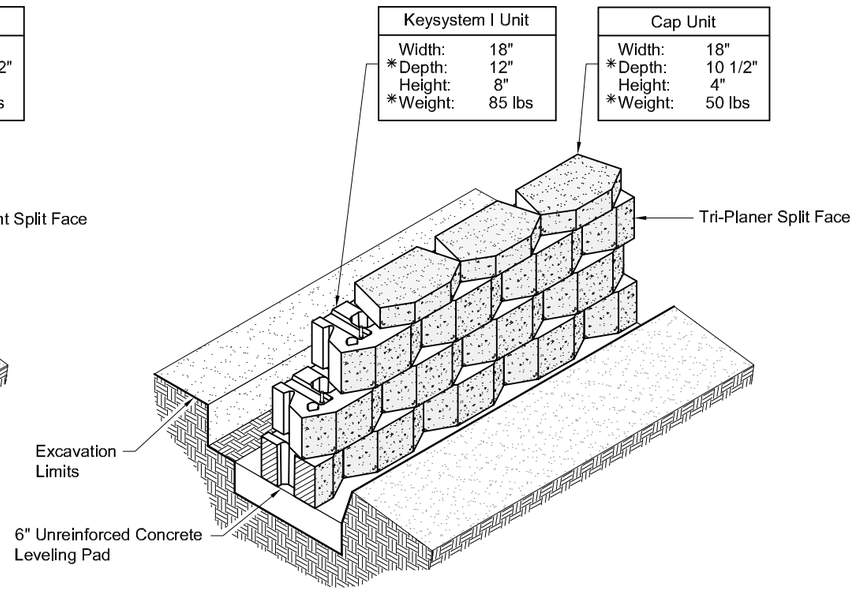
## Base Leveling Pad Notes:

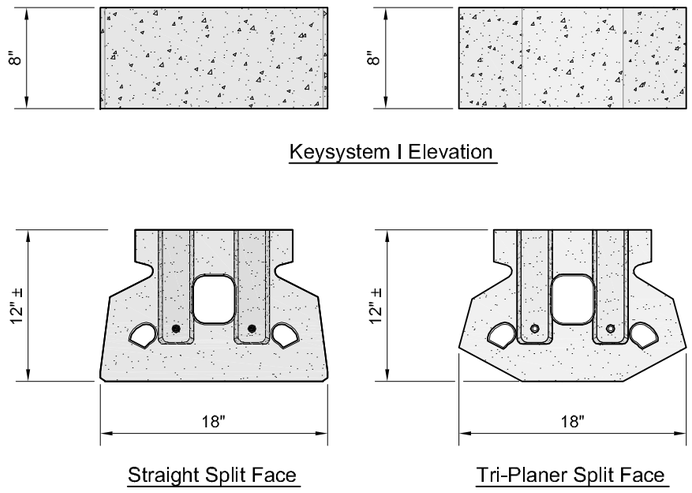
1. The leveling pad is to be constructed of class B (2,400 psi) unreinforced concrete
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.




Keysystem I Unit/Base Pad Isometric Section View

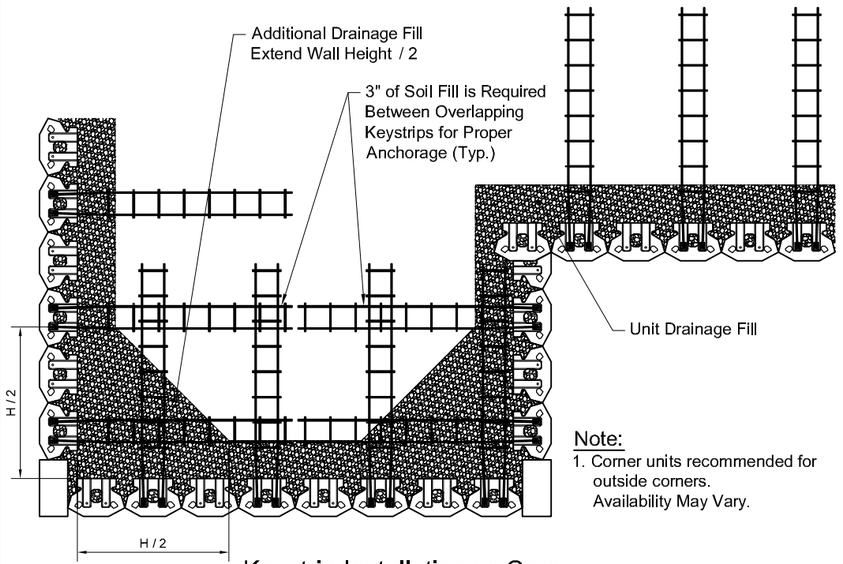
*Dimensions & Weight May Vary by Region



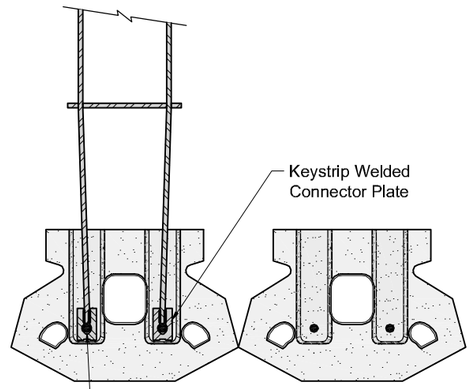

Keysystem I Unit

*Dimensions & Weight May Vary by Region

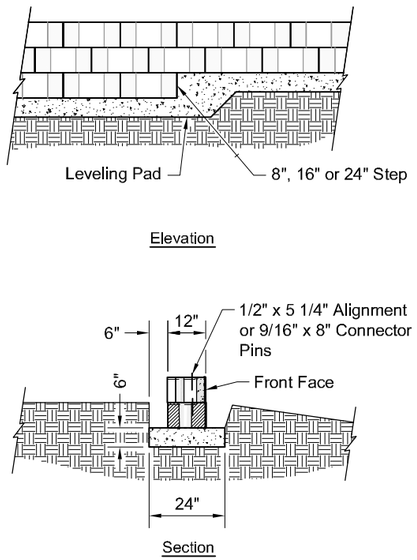



Note:
1. Corner units recommended for outside corners. Availability May Vary.

Keystrip Installation on Corners

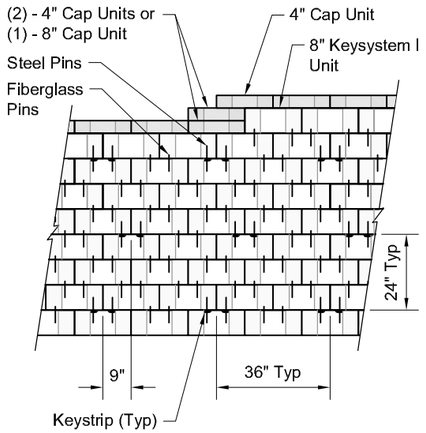



Keystrip & Pin Connection




Leveling Pad Detail

Note:
1. Secure all cap units with Keystone Kapseal or equal.




Top of Wall Steps & Typical Keystrip Layout



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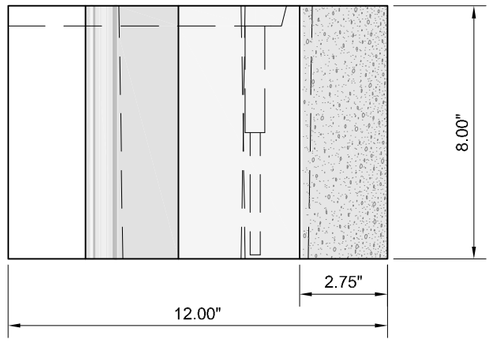
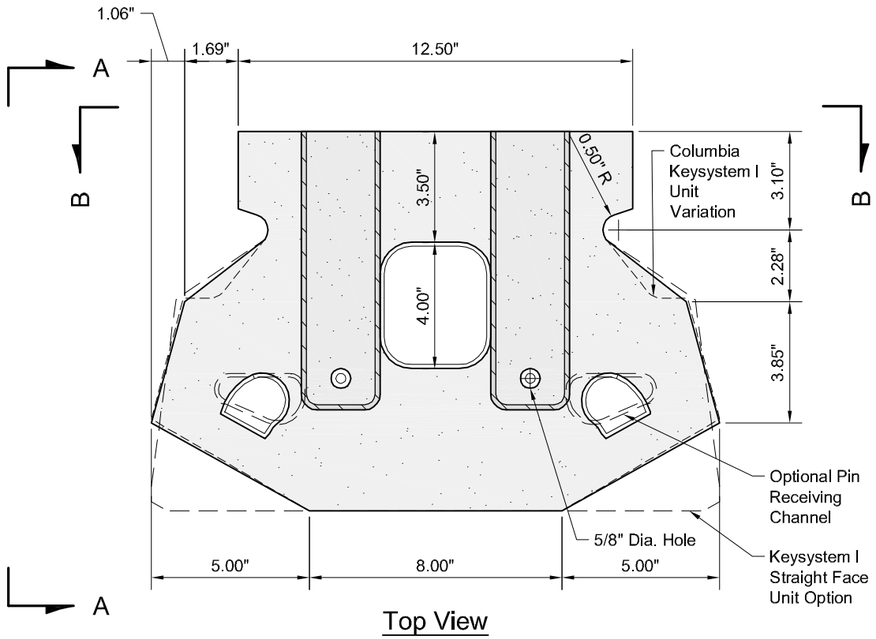
| Checked By: CDM | Date: 05/2010 |
| Scale: No Scale | Project: ADOT LRFD Submital Keysystem Details |
| | Drawing No: 2 |

Notes :

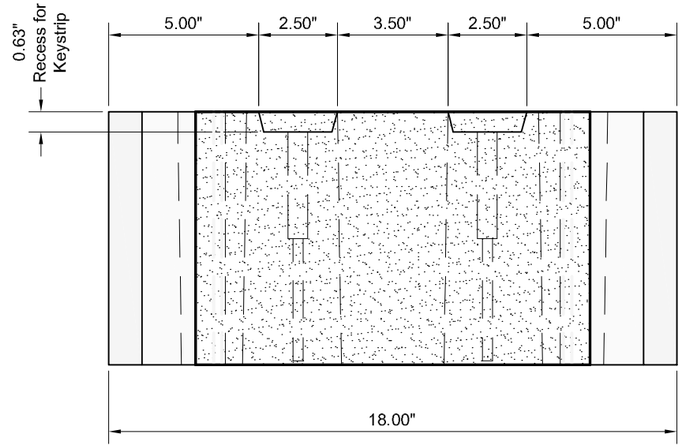
1. Wire is welded on one side of plate only.
2. Plate is fabricated from 3/8" thick ASTM A36 steel plate.
3. The Keystrips are shop fabricated from cold drawn steel wire conforming to minimum requirements of ASTM A-82 and fabricated in accordance with ASTM A 185.
4. The Keystrips are hot dipped galvanized in accordance with ASTM A-123 after fabrication.




Side View



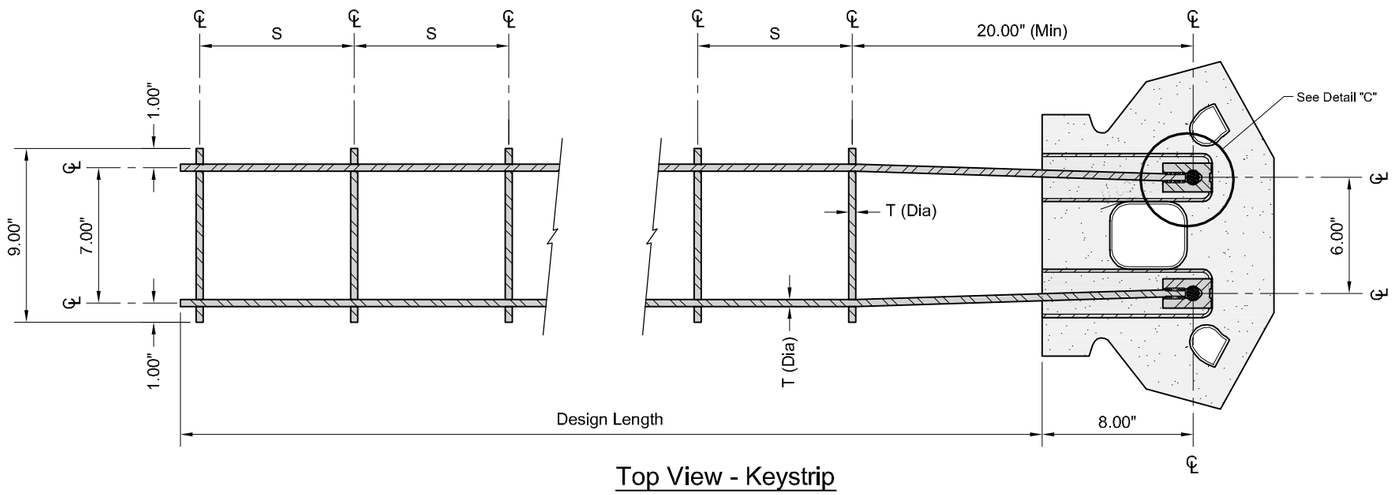

Top View



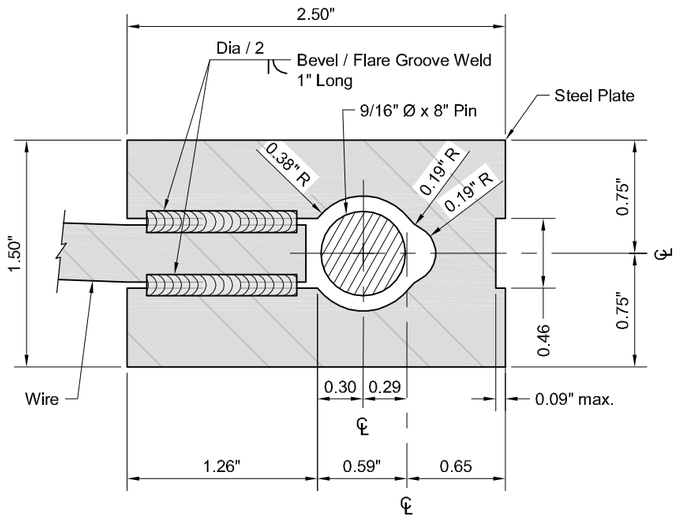

End View

| | Typical Wire Code | | | |
|---|---|---|---|---|
| | A | B | C | D |
| | W7.5 | W11 | W14 | W17 |
| S | 6" | 12" | 18" | 24" |
| DIA | 0.309" | 0.375" | 0.422" | 0.465" |

Note: Wire sizes and spacings vary for different design criteria.




Top View - Keystrip




Detail "C"



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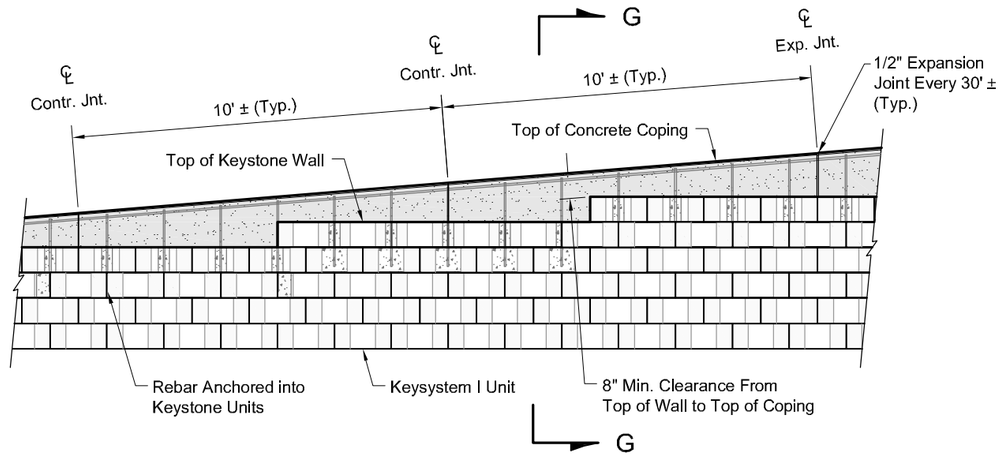
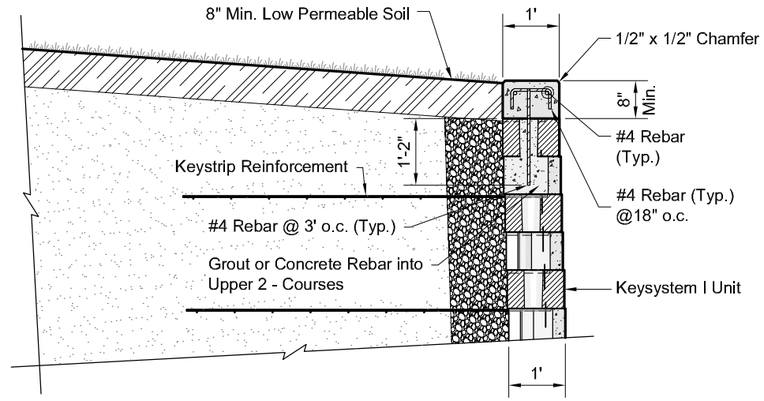
| | |
|---|---|
| Designed By: | RKM |
| Checked By: | CDM |
| Scale: | No Scale |
| Title: | Keysystem I Unit & Keystrip Details |
| Project: | ADOT LRFD Submital<br>Keysystem Details |
| Date: | 05/2010 |
| Drawing No: | 3 |



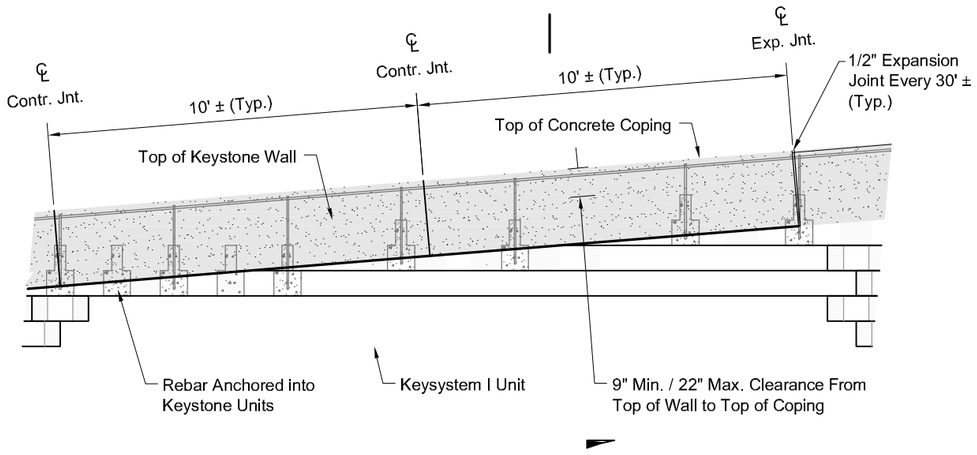

Partial C.I.P Top Concrete Coping Elevation



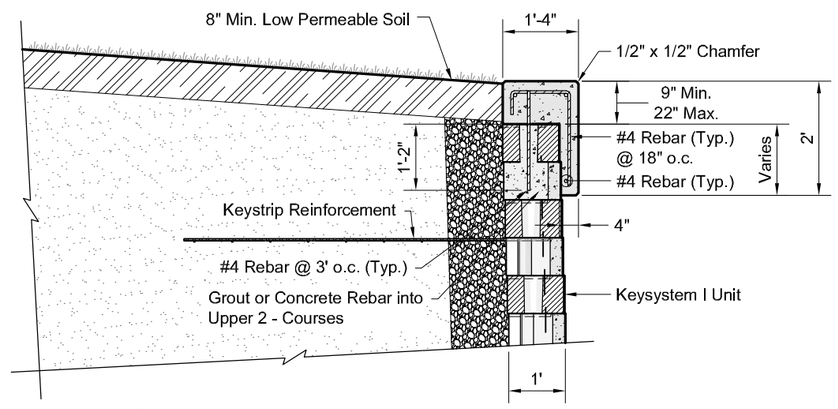

Note:

1. Maintain 2" minimum cover on all rebar.
2. Full expansion joints shall be placed every 3rd joint and at all wall radius and bend points.

Section G - G
C.I.P. Top Concrete Coping




Partial C.I.P Concrete Coping Elevation




Note:

1. Maintain 2" minimum cover on all rebar.
2. Full expansion joints shall be placed every 3rd joint and at all wall radius and bend points.
3. Insure that all top of wall steps are completely covered by overhang of concrete coping (2" min.).

Section F - F
C.I.P. Concrete Coping



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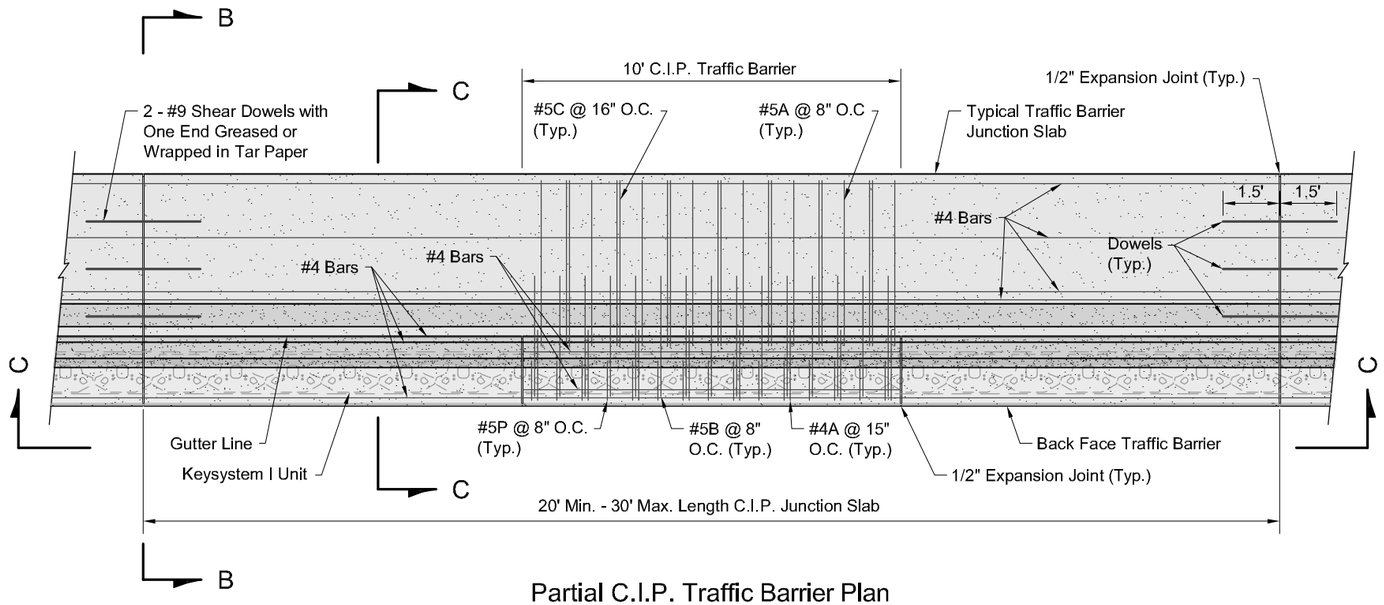
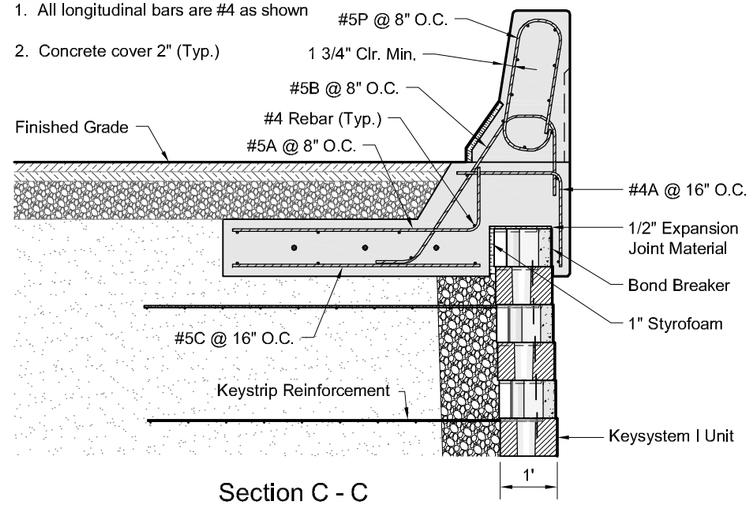
| Designed By: RKM | Title: Keysystem I C.I.P. Coping Details | | Date: 05/2010 |
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details | | Drawing No: 4 |
| Scale: No Scale | | | |

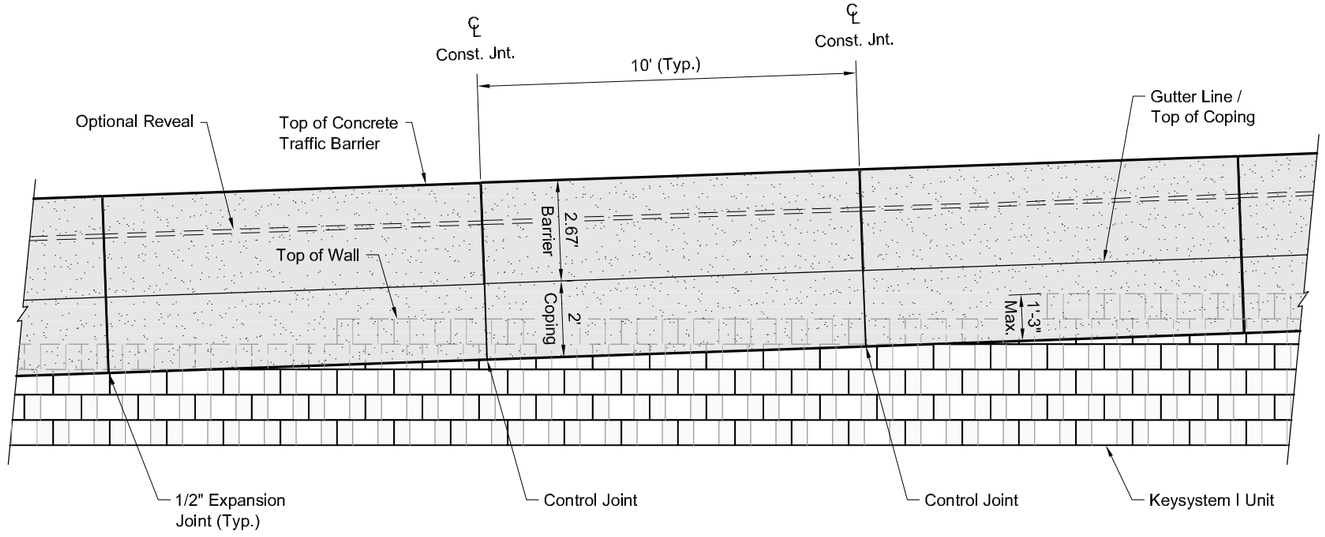



Partial C.I.P. Traffic Barrier Plan

Note:
1. All longitudinal bars are #4 as shown
2. Concrete cover 2" (Typ.)

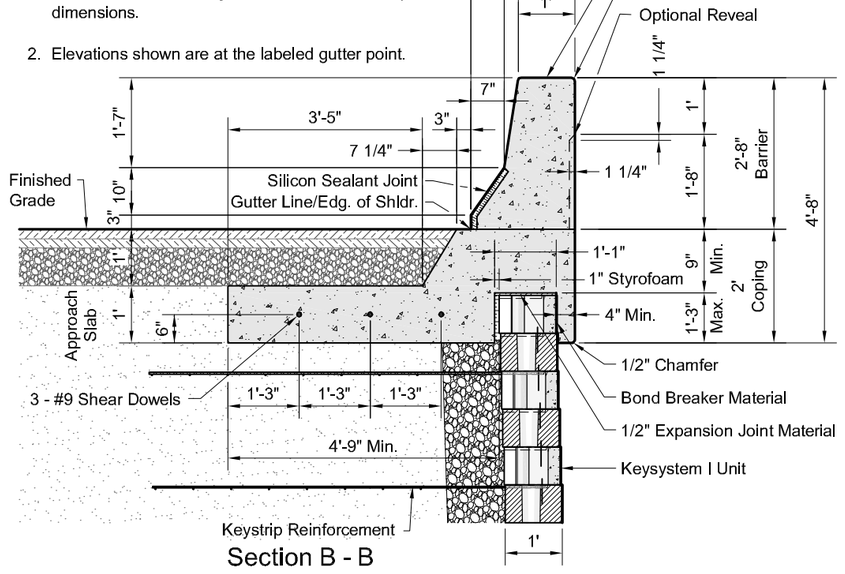



Section C - C
C.I.P. Traffic Barrier Reinforcement




Partial C.I.P. Traffic Barrier Elevation A - A

Note:
1. If short C.I.P. barrier sections are to be constructed adjacent to precast barrier sections, then this sections dimensions shall be adjusted to conform to the precast dimensions.
2. Elevations shown are at the labeled gutter point.




Section B - B
C.I.P. Traffic Barrier Layout



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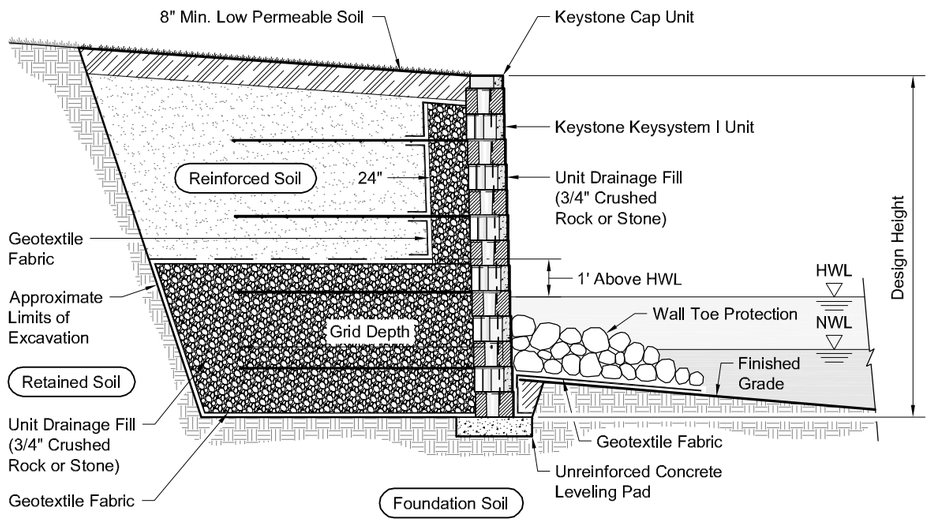
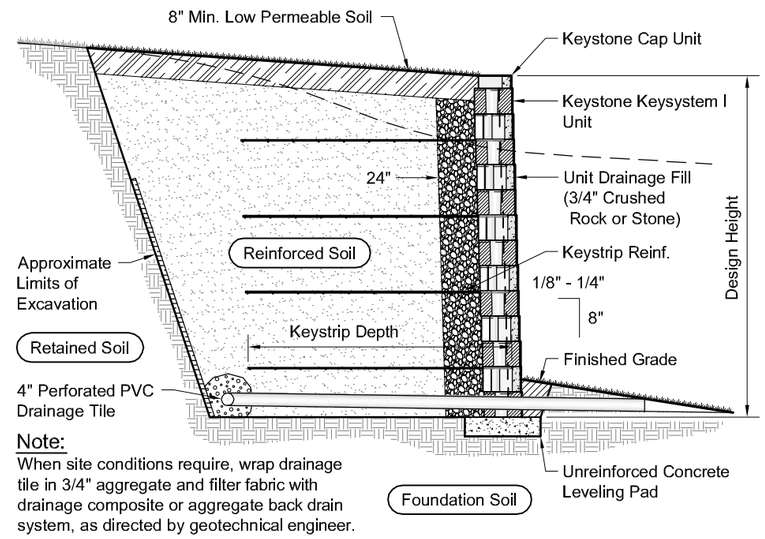
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details |
| Scale: No Scale | Date: 05/2010 |
| | Drawing No: 5 |




## Typical Reinforced Water Wall Section

Keysystem I Unit - Near Vertical Setback

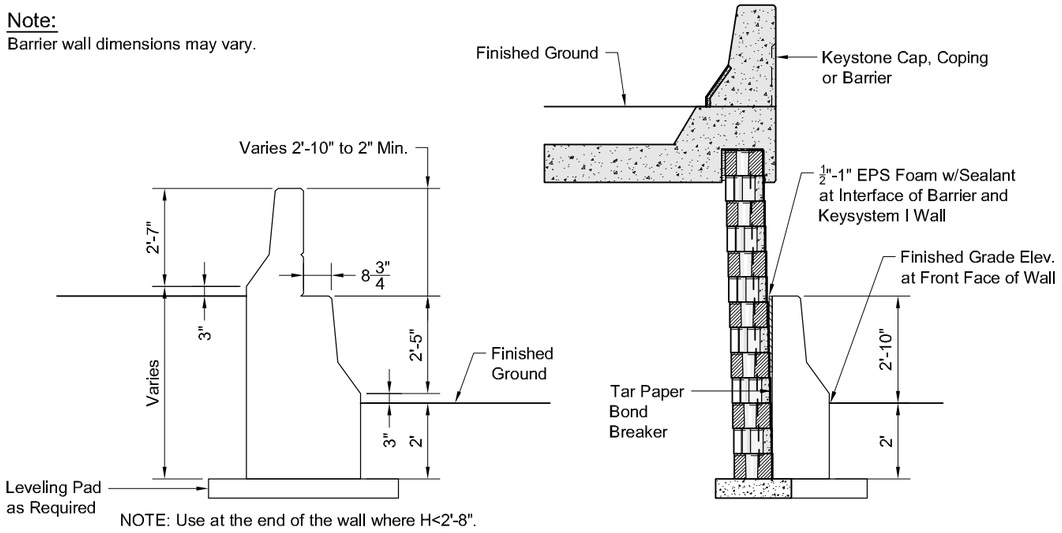



Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

## Typical Reinforced Wall Cut Section

Keysystem I Unit - Near Vertical Setback

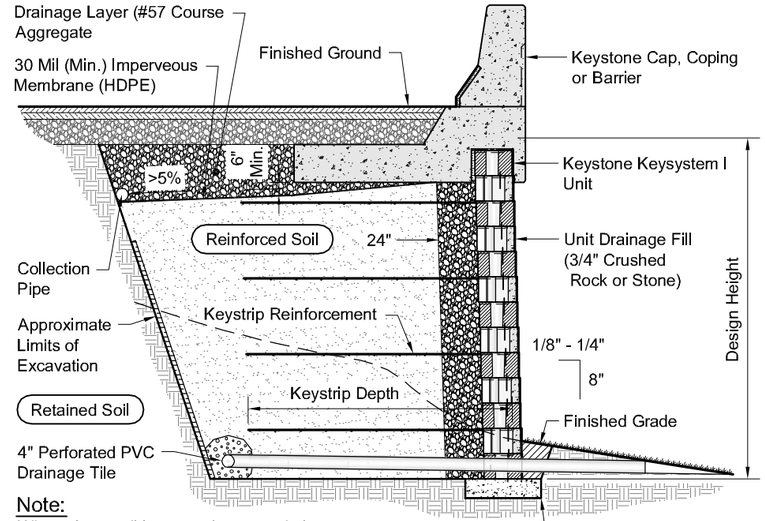
Note:
Barrier wall dimensions may vary.




NOTE: Use at the end of the wall where H<2'-8".

## MSE Barrier, Moment Slab and Concrete Barrier Wall Details

Keysystem I Unit - Near Vertical Setback




Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

## Typical Reinforced Wall Fill Section

Keysystem I Unit - Near Vertical Setback



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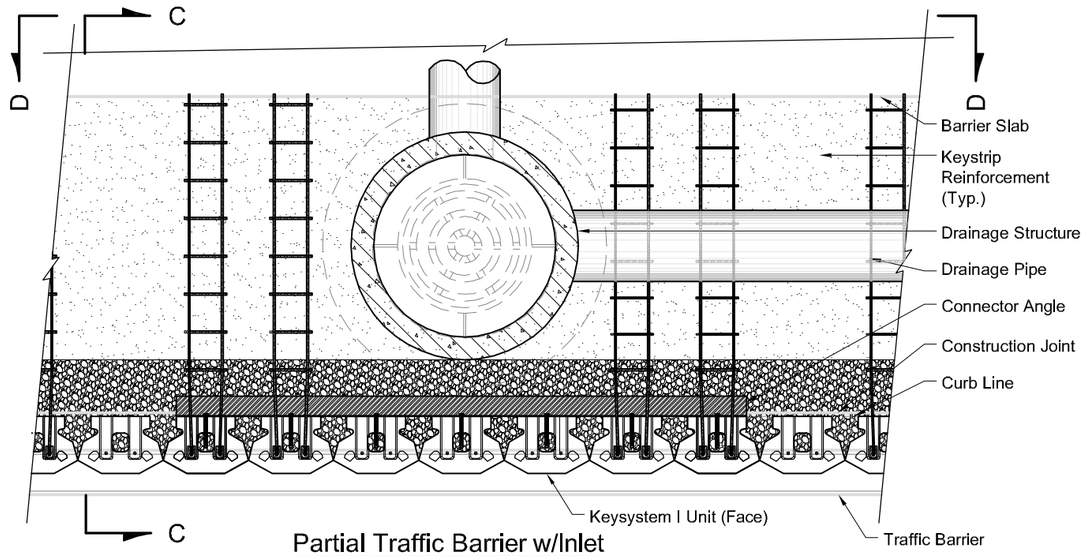
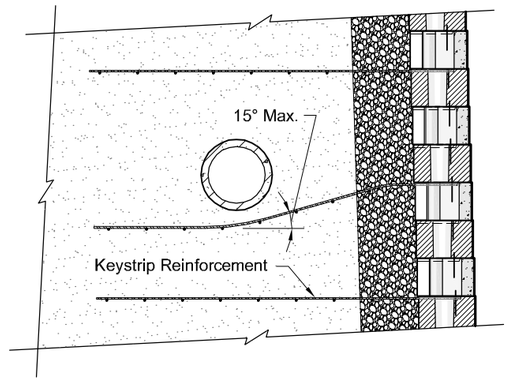
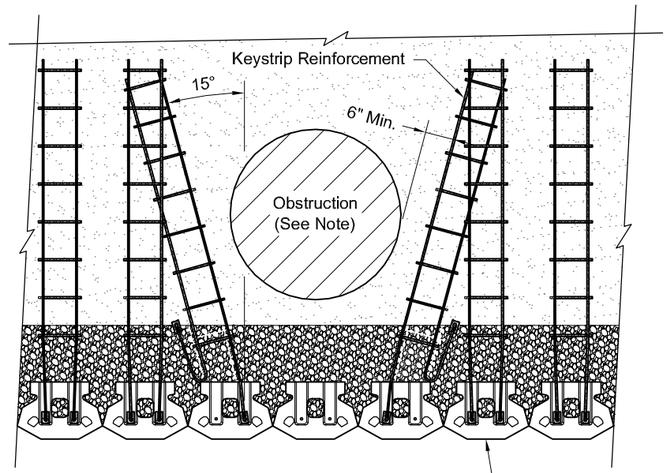
| | | | |
|---|---|---|---|
| Designed By: RKM | Title: Keysystem I Typical Sections Details | | Date: 05/2010 |
| Checked By: CDM | | | |
| Scale: No Scale | Project: ADOT LRFD Submital Keysystem Details | | Drawing No: 6 |




## Partial Traffic Barrier w/Inlet Behind Wall Plan




## Horizontal Obstruction Detail

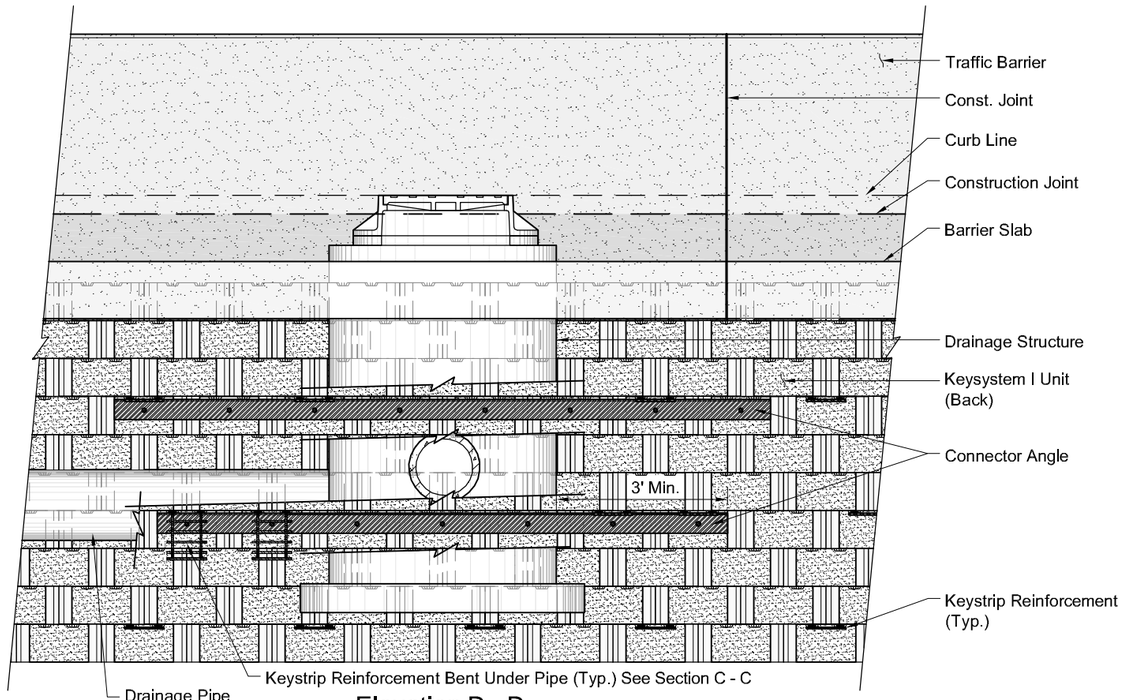



## Vertical Obstruction Detail

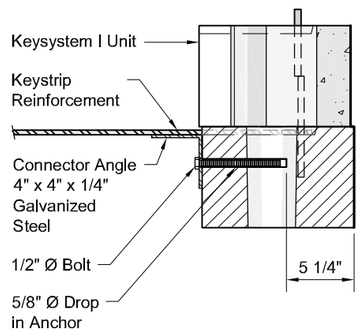
## Keystrip Skew Details

Note:

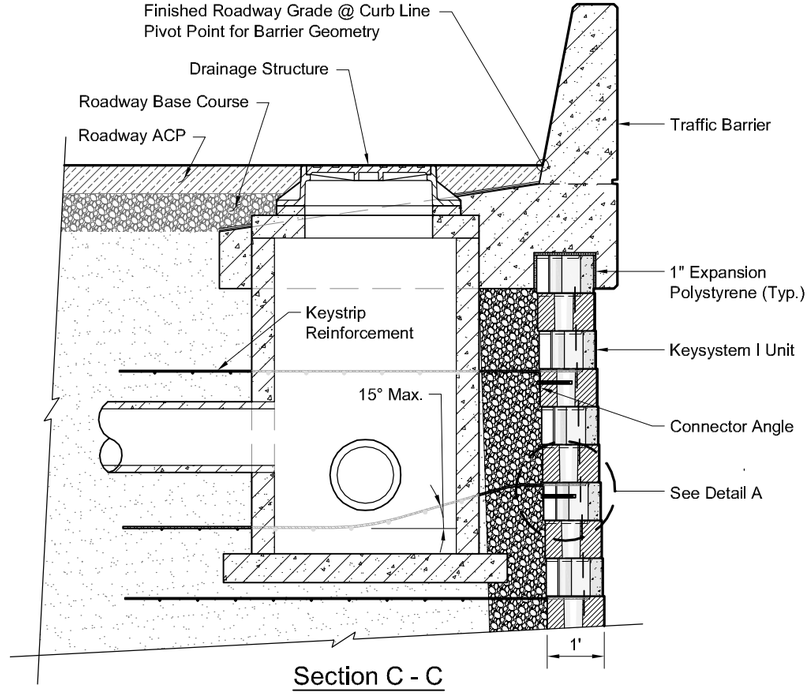
1. The Keystrips are to be field cut and welded as required. All cut and welded surfaces are to be coated with a cold tar epoxy or zinc rich paint.
2. The size of the tube is limited by the minimum clearance and strip inclination limits shown.




## Elevation D - D




## Detail A




## Section C - C



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| | |
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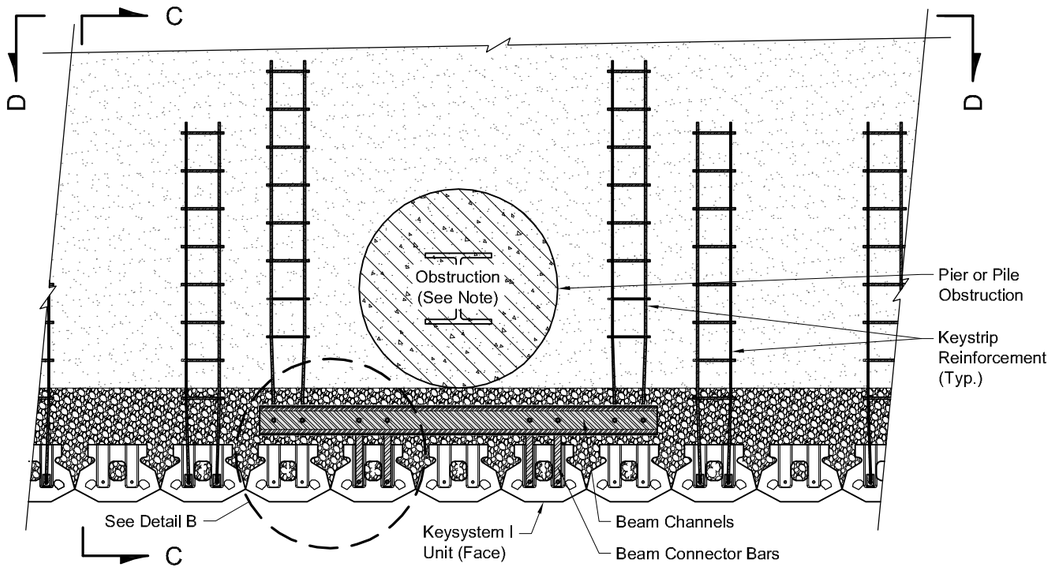
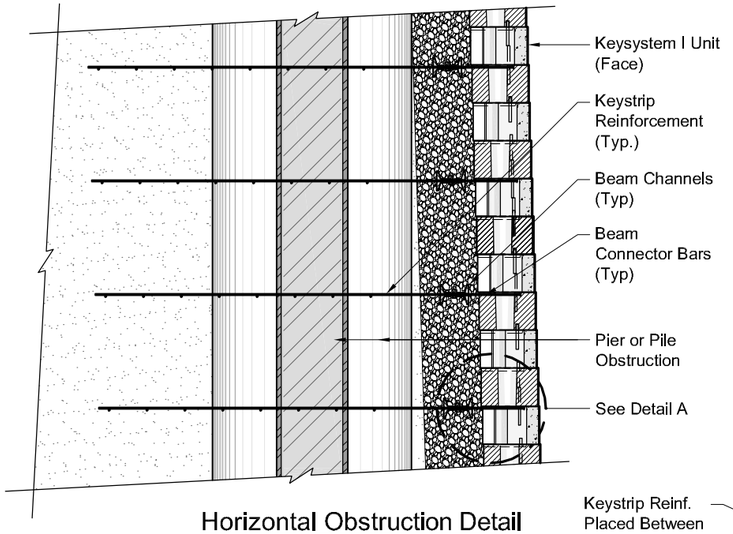
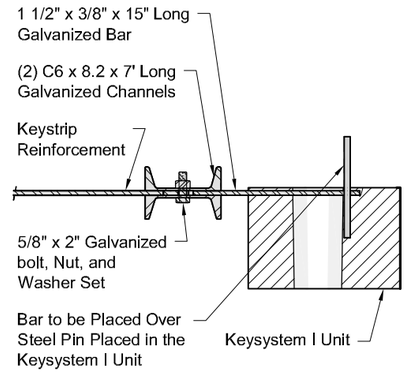
| Designed By: RKM | Title: Keysystem I Inlet Obstruction Details |
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details |
| Scale: No Scale | Date: 05/2010 |
| | Drawing No: 7 |



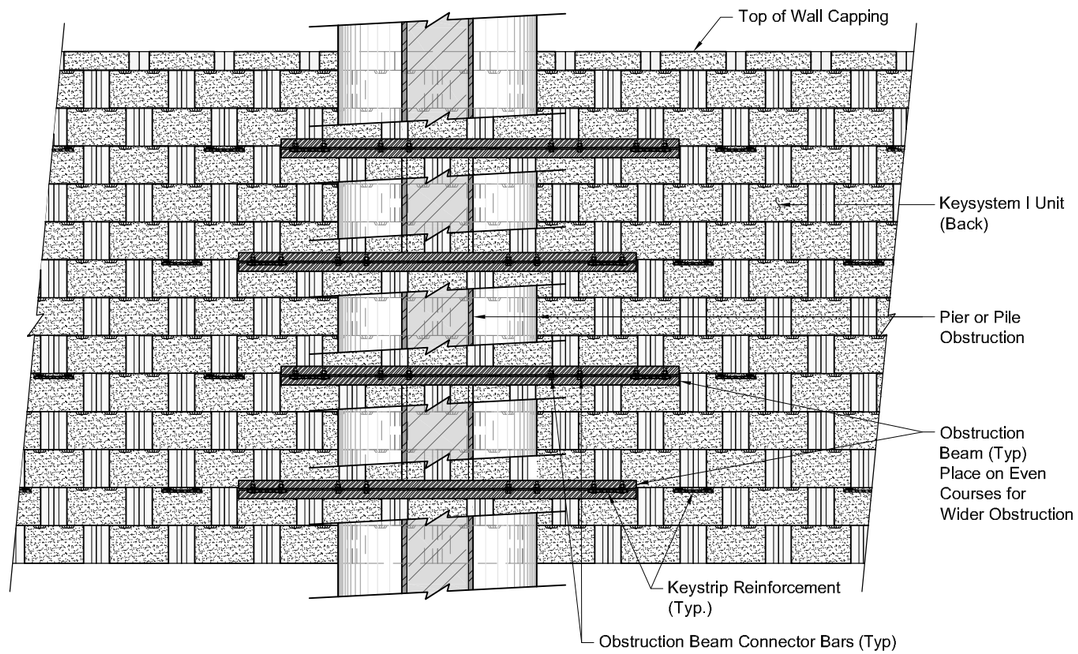

Vertical Pier or Pile Obstruction Behind Wall Plan Detail




Horizontal Obstruction Detail




Detail A



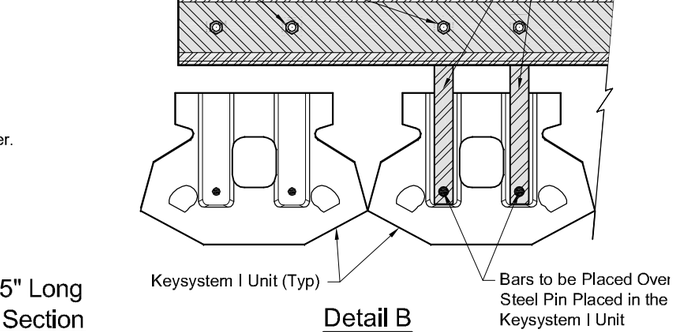

Elevation D - D

Layout Procedure Note:

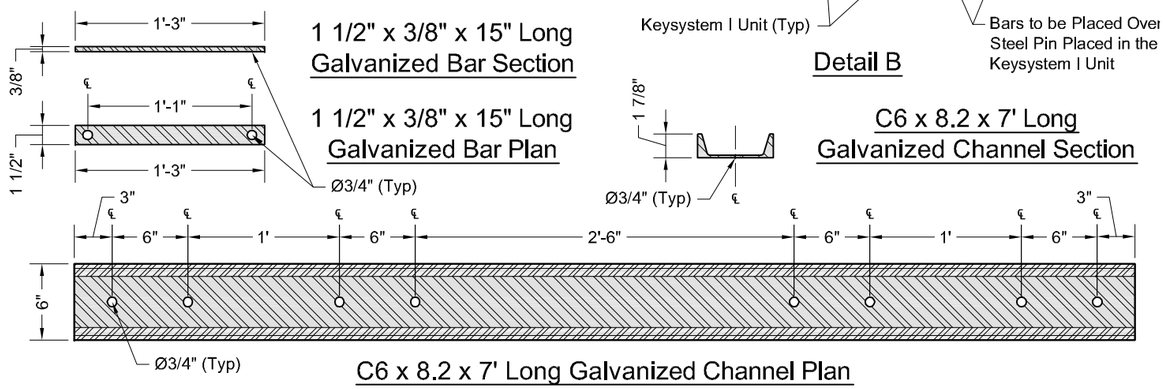
1. Install beam centered ± on pier or pile obstruction. Connect to blocks that fit best.
2. Install Keystrips on each end of the beam.
3. Install two Keystrips between frames as shown unless there is only space for one (1) Keystrip based on beam layout.

Steel Note:

1. Channels and bars shall conform to ASTM A36 steel or better.
2. Bolts shall conform to ASTM A307 or better.
3. Galvanization shall conform to ASTM A123.




Detail B




C6 x 8.2 x 7' Long Galvanized Channel Plan



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|---|---|
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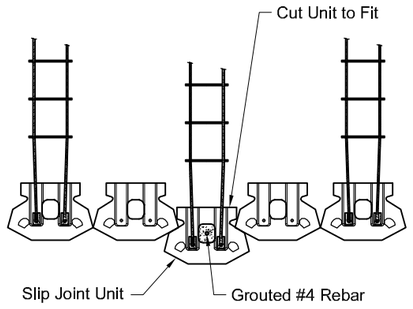
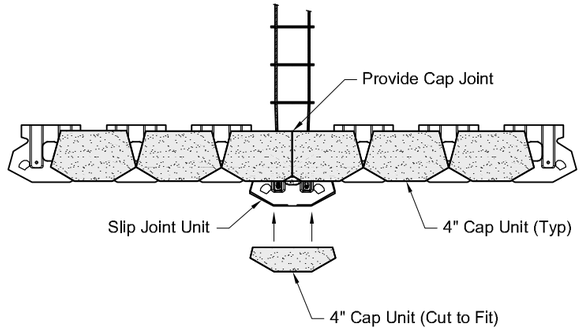
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details |
| Scale: No Scale | Date: 05/2010 |
| | Drawing No: 8 |

## Slip Joint Notes:

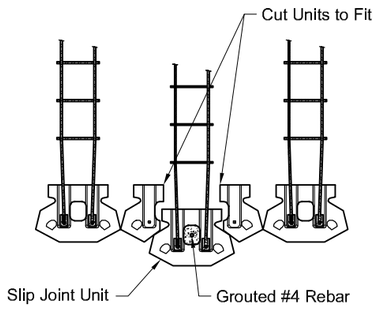
1. The core of the slip joint unit is to have a grouted #4 rebar extending from keystrip level to keystrip level (24" nominal height).
2. Drill out holes in the bottom of each slip joint unit to allow the steel or fiberglass pins to protrude into the units above.
3. Cut the tails off the slip joint unit to accomodate adjoining units as required.
4. Cut adjoining units to fit as required (see second course).
5. Cut 4" cap unit to cover exposed slip joint unit. Use kapseal adhesive to secure.



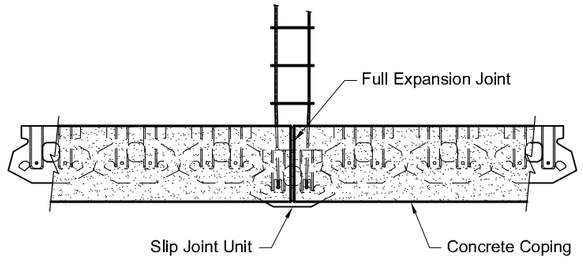

First Course




4" Cap Unit at Slip Joint




Second Course

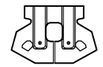



Concrete Coping at Slip Joint

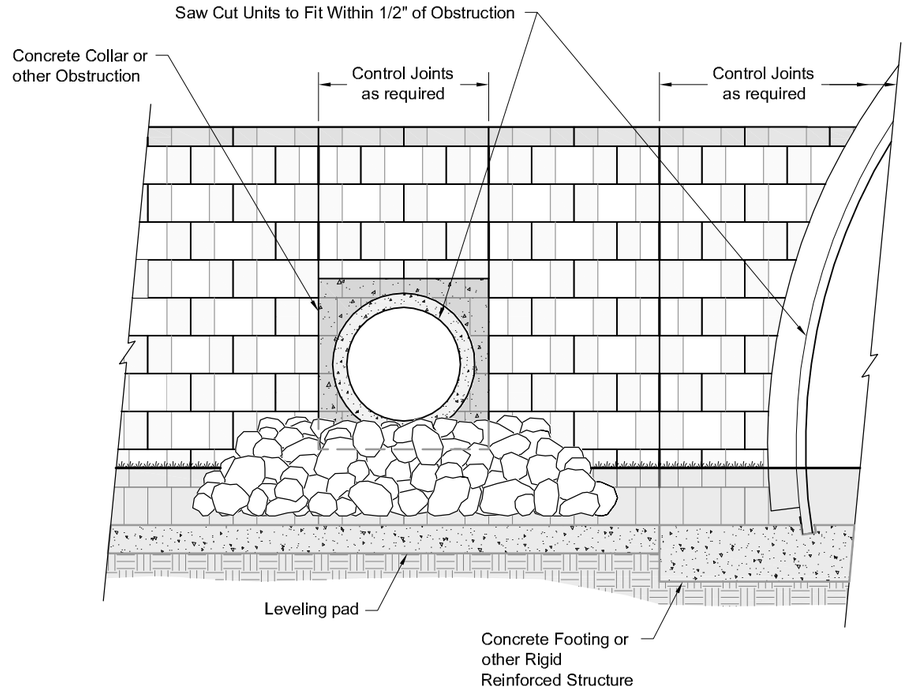
## Typical Slip Joint Details

## Control Joint Notes:

1. Vertical settlement control joints to be located at transition from the footing to the leveling pad and at the outside edges of obstructions that go through wall face.
2. Make control joint cuts at centerline of block face and cut through to center core of the unit.



Control Joint Cut




## Typical Cut Joint Details



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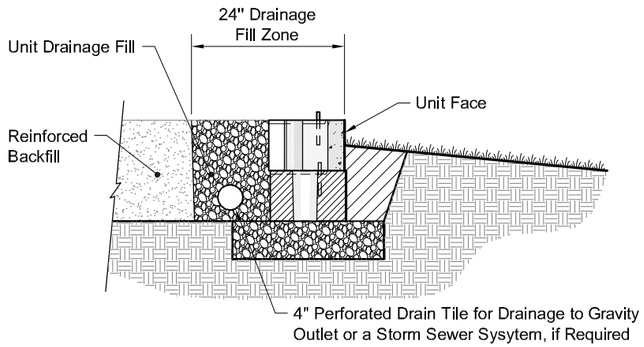
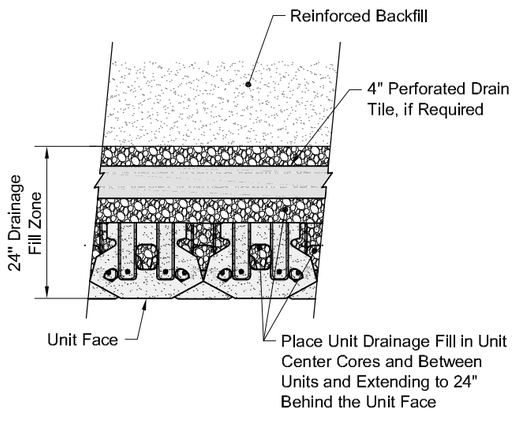
| | | |
|---|---|---|
| Designed By: RKM | Title: Keysystem I Slip Joint / Cut Joint Details | Date: 05/2010 |
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details | Drawing No: 9 |
| Scale: No Scale | | |

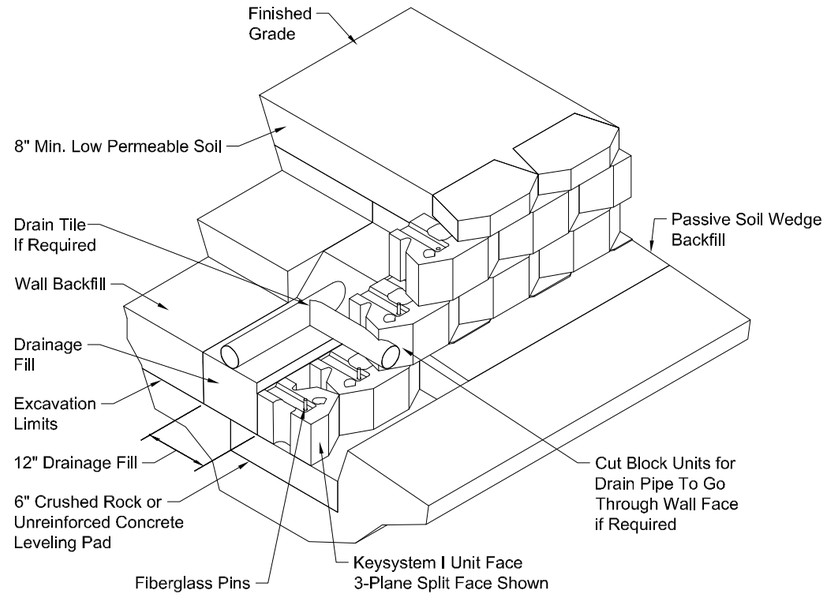



## Drain / Unit Drainage Fill Section

Note:
Drainage tile is not required directly behind the wall units for conventional wall construction where retained soils are not a source of groundwater such as fill wall construction or cut walls into relatively dry banks. When required, the size, location, and type of specific drainage materials should be completed as directed by the onsite geotechnical engineer.




## Drain / Unit Drainage Fill Plan




## Keysystem I Unit / Wall System Isometric Cut Section View



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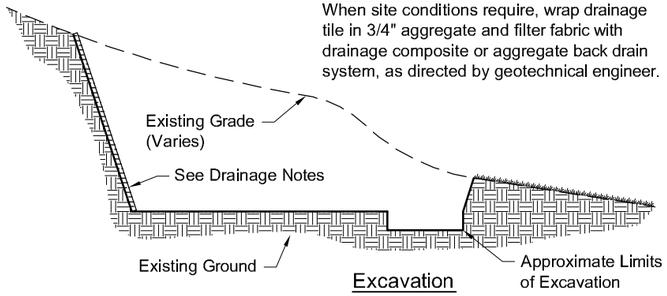
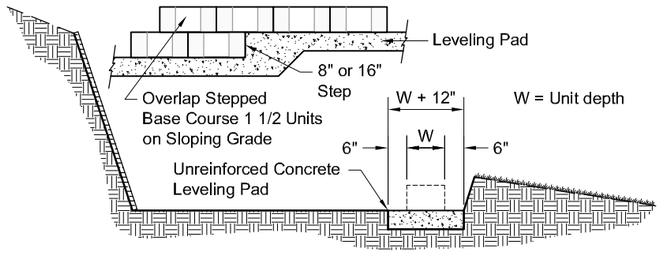
|---|---|---|
| Designed By: RKM | Title: Keysystem I Wall Drain Details | Date: 05/2010 |
| Checked By: CDM | Project: ADOT LRFD Submital Keysystem Details | Drawing No: 10 |
| Scale: No Scale | | |

Drainage Notes:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.



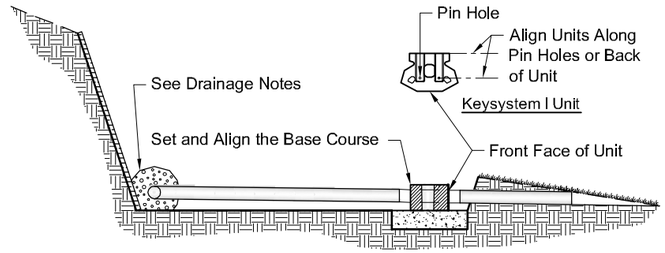

Excavation

## Assembly Section Step 1



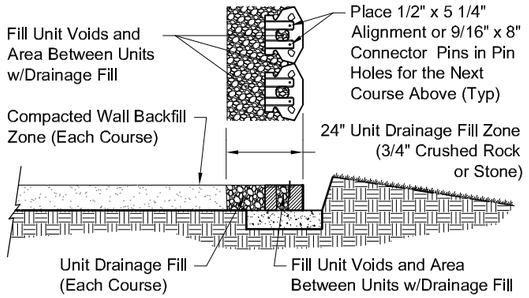

Place and Compact Leveling Pad / Drainage

## Assembly Section Step 2



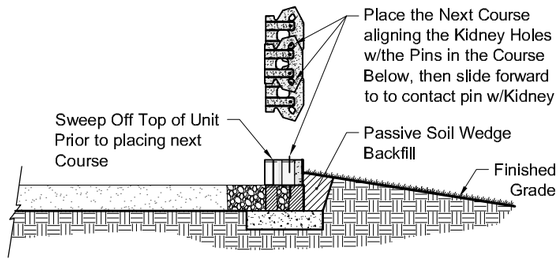

Place and Align Base Course / Drainage

## Assembly Section Step 3



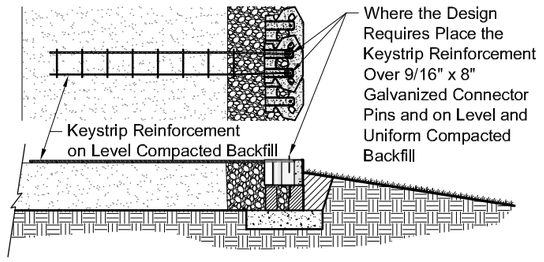

Place Pins, Unit / Drainage Material, Compacted Backfill

## Assembly Section Step 4



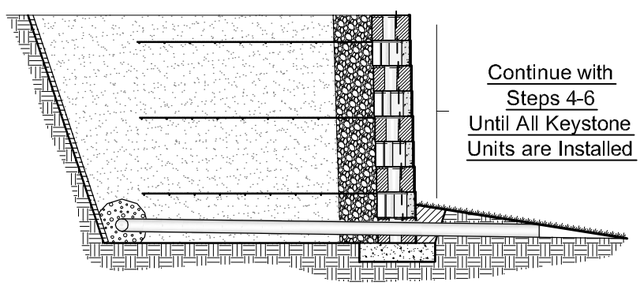

Place Additional Courses

## Assembly Section Step 5

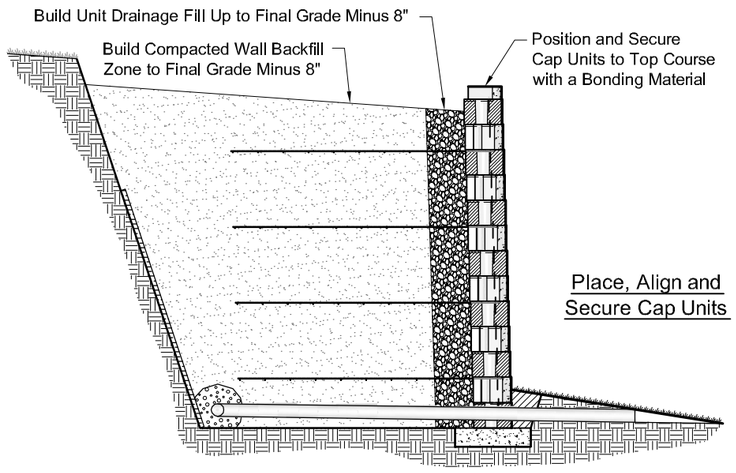



Place Reinforcement, as Required

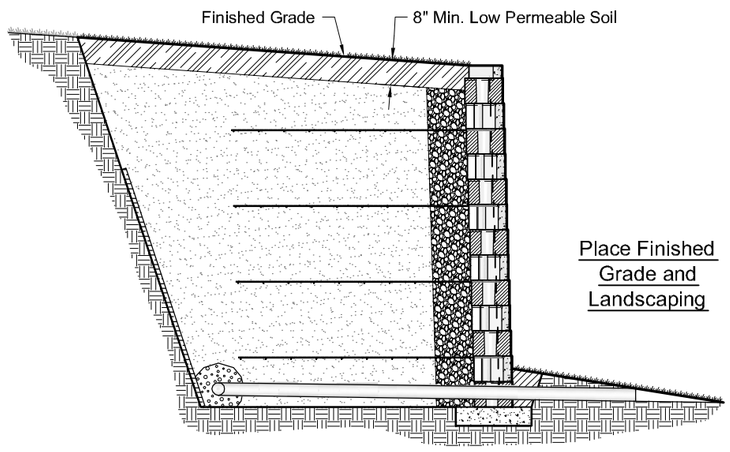
## Assembly Section Step 6




## Assembly Section Step 7




## Assembly Section Step 8




## Assembly Section Step 9



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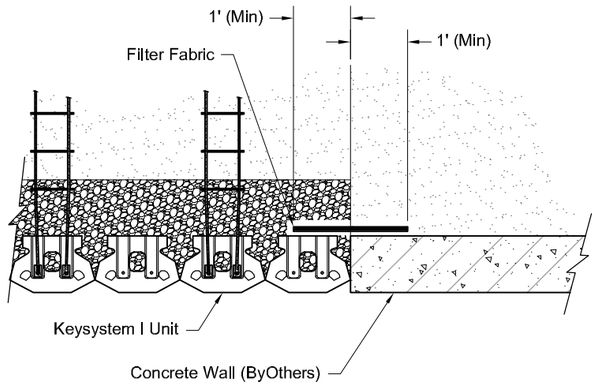
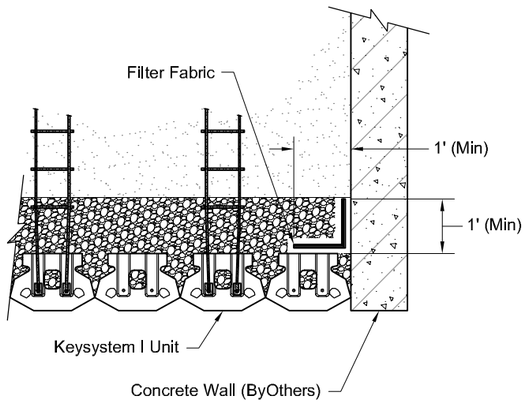
| | |
|---|---|
| Designed By: | RKM |
| Checked By: | CDM |
| Scale: | No Scale |
| Title: | Keysystem I Wall Backfill Procedure Details |
| Project: | ADOT LRFD Submital<br>Keysystem Details |
| Date: | 05/2010 |
| Drawing No: | 11 |

Filter Fabric Notes:

1. Attach filter fabric to Keysystem I units and Obstructions with construction adhesive.




Parallel Connection Detail




Perpendicular Connection Detail



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Designed By: RKM
Checked By: CDM
Scale: No Scale

Title: Keysystem I Wall Structure Connection Appurtenances Details

Project: ADOT LRFD Submital
Keysystem Details

Date: 05/2010

Drawing No: 12