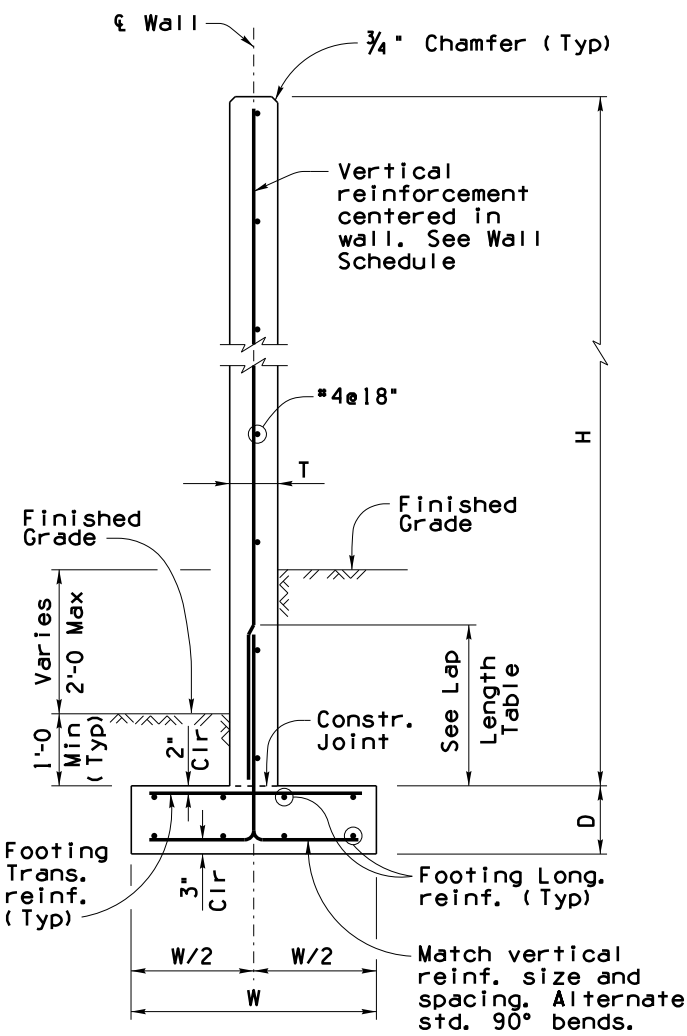
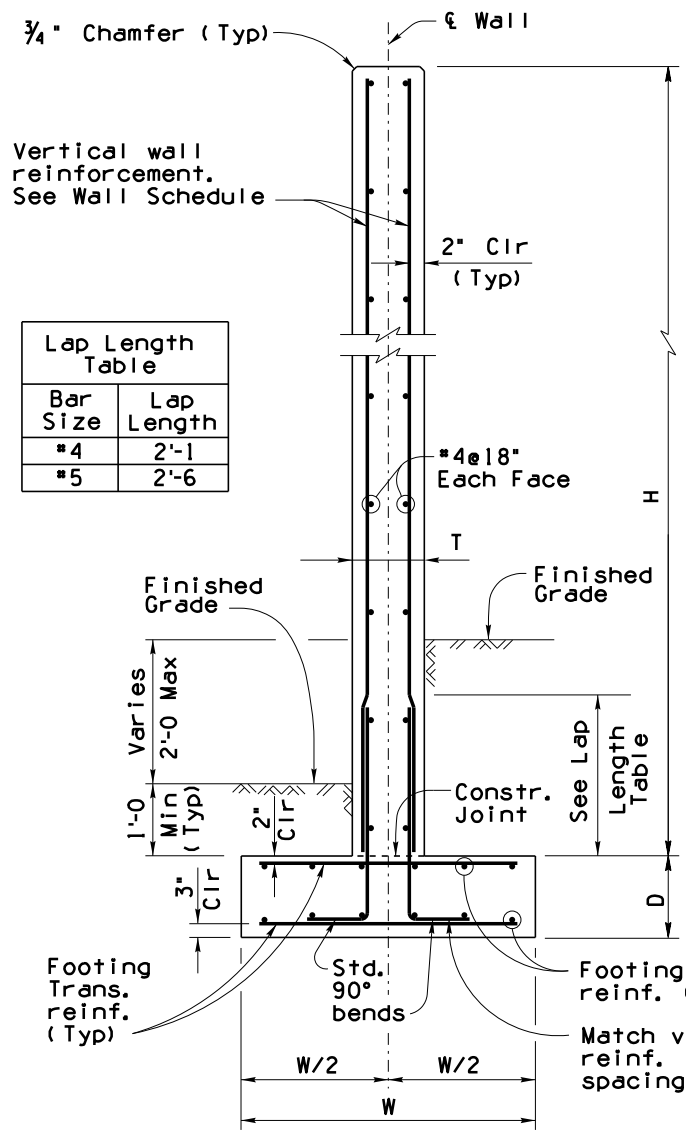


Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering practice and is intended for general information only. It is not intended to constitute a contract. The user of this drawing shall be responsible for its application and for any modifications. The user shall not be held liable for any errors or omissions. The user shall not be held liable for any damages, including consequential damages, arising from the use of this drawing. The user shall not be held liable for any claims, damages, or expenses, including reasonable attorneys' fees, arising from the use of this drawing. The user shall not be held liable for any claims, damages, or expenses, including reasonable attorneys' fees, arising from the use of this drawing.



**TYPICAL WALL SECTION**  
(For Wall Height up to 11'-11)



**TYPICAL WALL SECTION**  
(For Wall Height 12'-0 to 26'-0)

Lap Length Table	
Bar Size	Lap Length
#4	2'-1
#5	2'-6

WIND LOADING		
Limit State	Wind Velocity (mph)	Pressure (psf)
Service I	70	12.82
Service IV	86.25	19.46
Strength III	115	34.59
Strength V	80	16.74

SOUND BARRIER WALL (CONCRETE)	
Item No.	9140136
Measure	Square Foot

**WALL DESIGN NOTES:**

Sound barrier walls selection shall be based on the noise analysis. The wall selected shall account for a future 4 foot wall height extension.

Values shown in the wall schedule represent the design values for each wall height including a future 4 foot extension. No modifications to the wall schedule will be needed to extend the wall a maximum of 4 feet.

Wall designer shall note on the plans that the wall has been designed to allow for a 4 foot extension.

The maximum wall height selected from the wall schedule shall not exceed 26'-0 to allow for a 4 foot future wall extension.

**GENERAL NOTES:**

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017 with 2018 Interims.

Wind Exposure Category C. For wind design load, see Wind Loading table.

Vehicular collision forces are not included in the design of the sound walls.

All Concrete shall be Class "S" ( $f'c = 3,000$  psi).

Reinforcing steel shall conform to ASTM A615. All reinforcing shall be furnished as Grade 60.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 2 inch clear cover unless noted otherwise.

Chamfer all exposed corners  $\frac{3}{4}$ " unless noted otherwise.

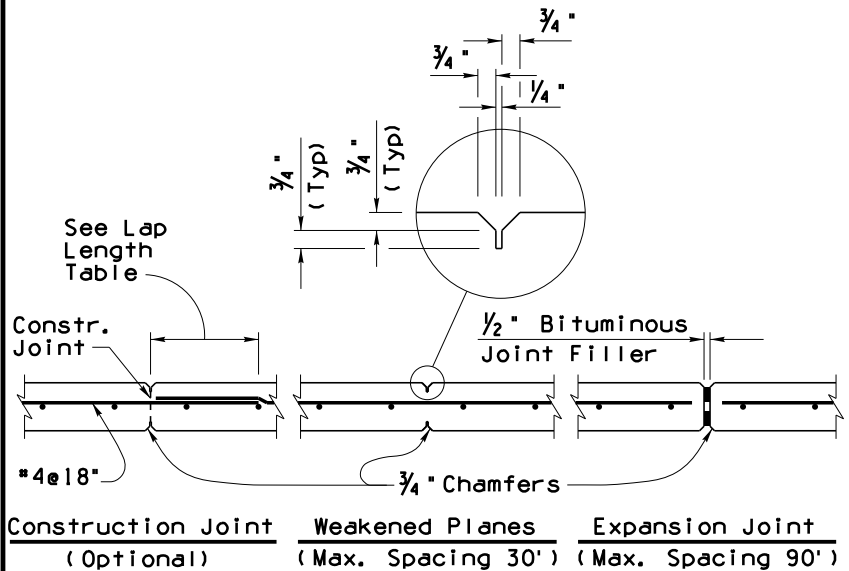
Compact backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

See Project Plans for wall layout, top of footing and finished grade elevations, footing step and wall joint locations. Construction Joints shall match the locations of weakened plane joints.

See Project Plans for wall surface treatment. Increase the wall thickness for any treatment depth greater than  $\frac{3}{4}$ ".

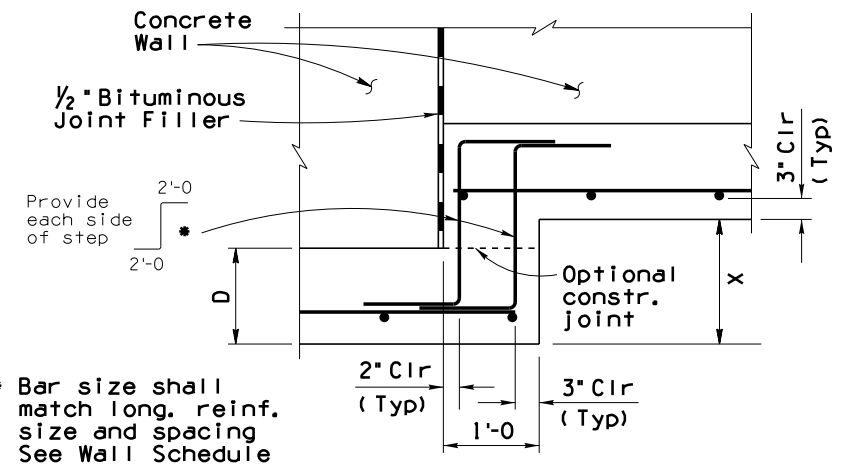
Pay item measure of square foot of wall constructed will be measured along the front face of the wall from top of footing to top of wall cap.

Dimensions shall not be scaled from drawings.



**TYPICAL JOINT DETAILS**  
(Detail shown for 8" thick wall)

Wall Design Height H	Wall Thick T	Footing Depth D	Footing Width W	Reinforcing Steel			Factored Average Soil Bearing Pressure (psf)
				Wall	Footing		
				Vertical Reinf.	Trans. Reinf.	Long. Reinf.	
4'-0 to 5'-11	6"	1'-0	3'-6	#4@9"	#4@9"	#4@16"	1,400
6'-0 to 7'-11	8"	1'-0	4'-0	#5@12"	#5@12"	#5@16"	1,500
8'-0 to 9'-11	8"	1'-3	4'-6	#5@12"	#5@12"	#5@16"	1,600
10'-0 to 11'-11	8"	1'-6	5'-0	#5@10"	#5@10"	#5@16"	1,700
12'-0 to 13'-11	10"	1'-6	5'-6	#5@12" E.F.	#5@12"	#5@16"	1,800
14'-0 to 15'-11	10"	1'-9	6'-0	#5@12" E.F.	#5@12"	#5@16"	1,900
16'-0 to 17'-11	12"	2'-0	6'-3	#5@12" E.F.	#5@12"	#5@16"	2,100
18'-0 to 19'-11	13"	2'-3	6'-6	#5@12" E.F.	#5@12"	#5@16"	2,300
20'-0 to 21'-11	14"	2'-6	6'-9	#5@12" E.F.	#5@12"	#5@16"	2,600
22'-0 to 23'-11	14"	2'-9	7'-0	#5@12" E.F.	#5@12"	#5@16"	2,800
24'-0 to 26'-0	14"	3'-0	7'-3	#5@10" E.F.	#5@10"	#5@16"	3,000



**FOOTING STEP DETAIL**

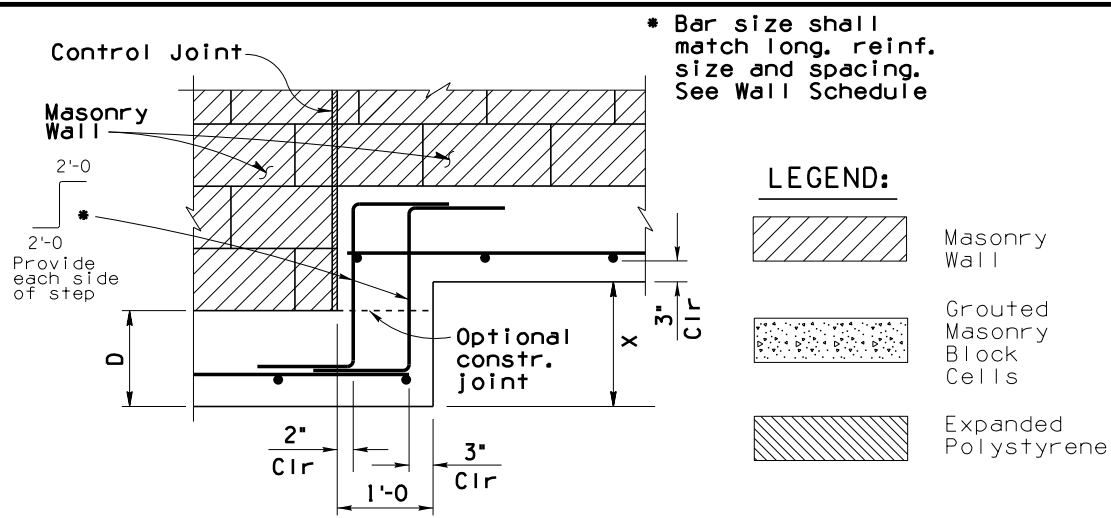
See Project Plans for location of footing steps and Dim. X

STANDARDS ENGINEER	<b>A. ALZUBI</b>
RECOMMENDED FOR APPROVAL	
GROUP MANAGER	<b>D. EBERHART</b>
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	06/22 DATE

ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING	
<b>SOUND BARRIER WALL CONCRETE</b>	DRAWING NO. <b>SD 8.01</b>

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

PRIOR DISTRIBUTION DATE 01/16



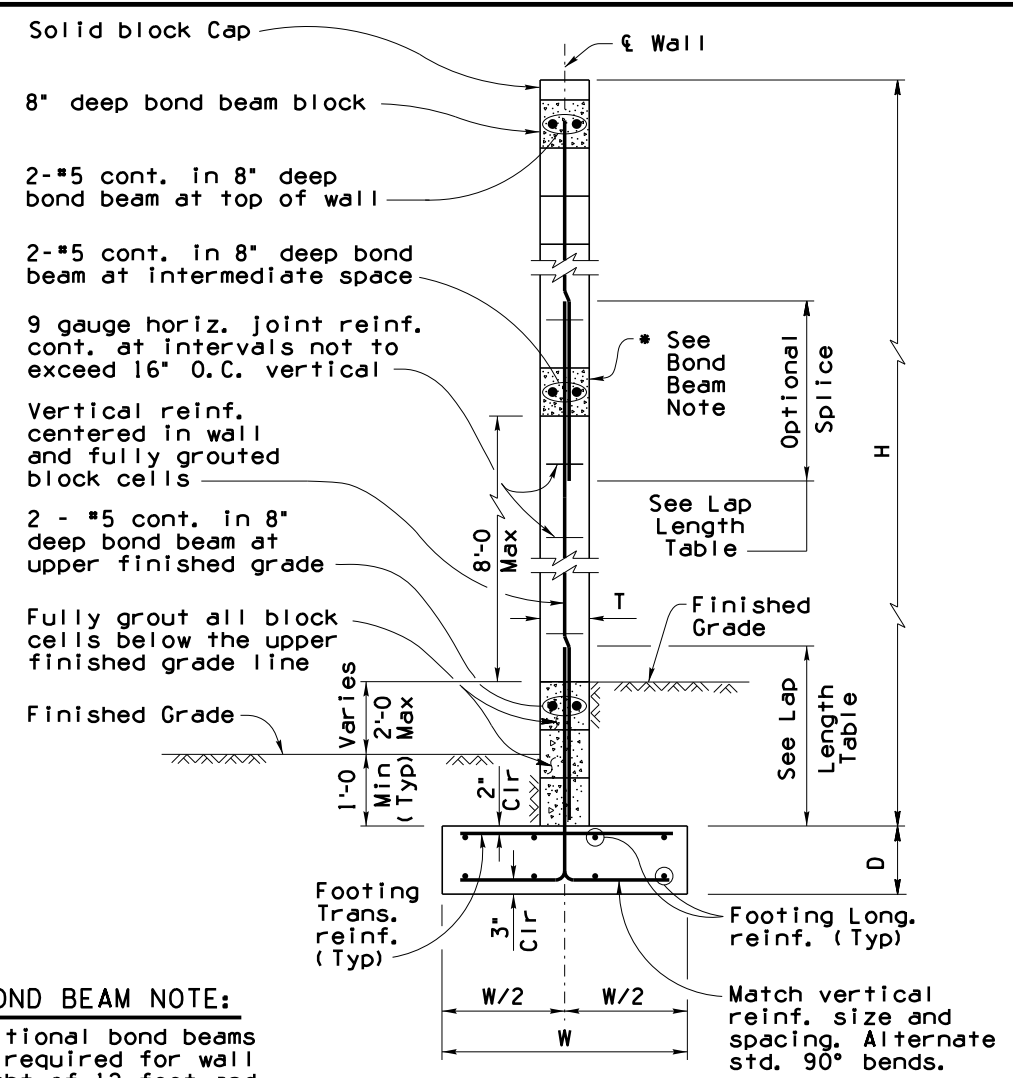
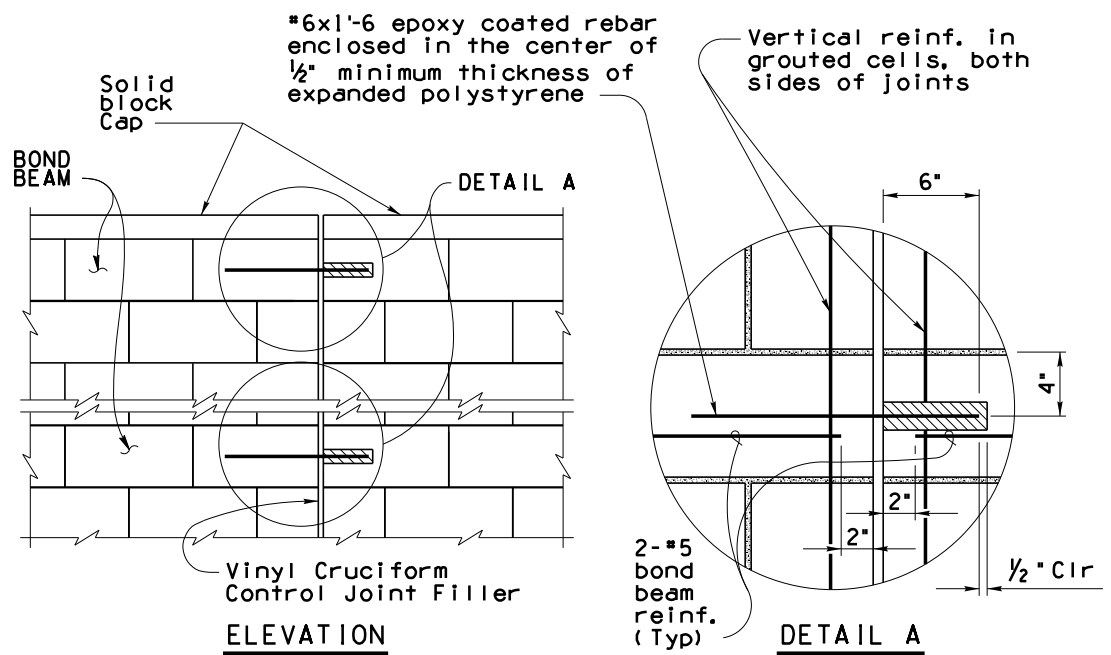
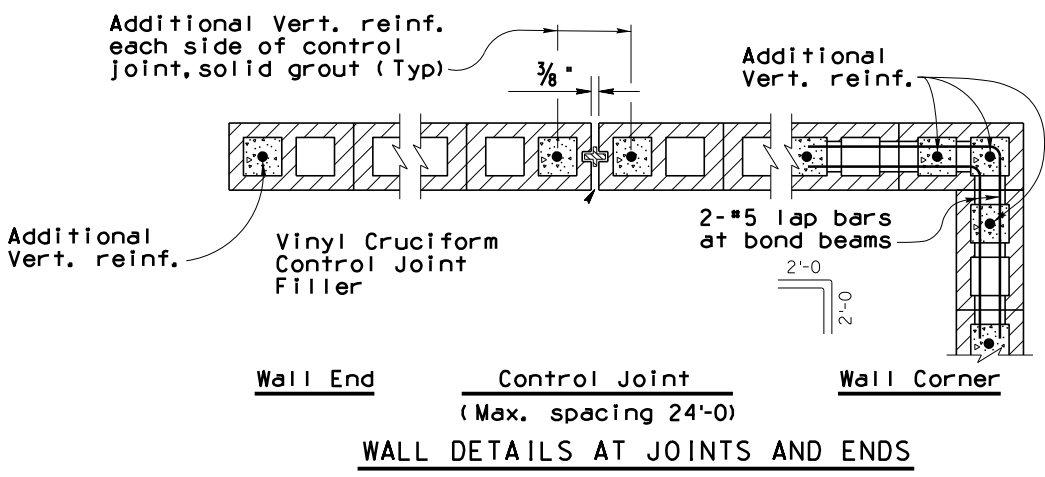
**FOOTING STEP DETAIL**  
See Project Plans for location of footing steps and Dim. X

\* Bar size shall match long. reinf. size and spacing. See Wall Schedule

**LEGEND:**

- Masonry Wall
- Grouted Masonry Block Cells
- Expanded Polystyrene

Item	<b>SOUND BARRIER WALL (MASONRY)</b>
Item No.	9140137
Measure	Square Foot



**\* BOND BEAM NOTE:**  
Additional bond beams are required for wall height of 12 feet and higher. Equally space bond beams at 8'-0 max.

Design Wall Height H	** Wall Thick T	Footing Depth D	Footing Width W	*** Reinforcing Steel			Factored Average Soil Bearing Pressure (psf)
				Wall	Footing		
				Vert. Reinf.	Trans. Reinf.	Long. Reinf.	
4'-0 to 5'-11	8"	1'-0	3'-6	*5e24"	*5e16"	*5e16"	1,400
6'-0 to 7'-11	8"	1'-0	4'-0	*5e16"	*5e16"	*5e16"	1,500
8'-0 to 9'-11	12"	1'-3	4'-6	*5e16"	*5e16"	*5e16"	1,600
10'-0 to 11'-11	12"	1'-6	5'-0	*6e16"	*6e16"	*5e16"	1,700
12'-0 to 13'-11	12"	1'-6	5'-6	*6e16"	*6e16"	*5e16"	1,800

\*\* Nominal Dimension    \*\*\* Additional Reinf. required at Control Joints

Bar Size	Lap Length
*4	2'-1
*5	2'-6
*6	2'-11
*7	3'-5
*8	3'-11

Limit State	Wind velocity (mph)	Pressure (psf)
Service I	70	12.82
Service IV	86.25	19.46
Strength III	115	34.59
Strength V	80	16.74

**NOTE:**

See SD 8.02 (2 of 2) "Typical Sections Through Vertical Wall Reinforcement" for similar details not shown on this sheet.

STANDARDS ENGINEER  
**A. ALZUBI**

RECOMMENDED FOR APPROVAL  
GROUP MANAGER  
**D. EBERHART**

APPROVED  
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION

06/22  
DATE

ARIZONA DEPARTMENT OF TRANSPORTATION  
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION  
BRIDGE GROUP STANDARD DRAWING

**SOUND BARRIER WALL MASONRY**

DRAWING NO.  
**SD 8.02**  
(1 of 2)

**GENERAL NOTES:**

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017, with the 2018 Interims, and the TMS 402/602-16 Building Code requirements and specifications for Masonry Structures.

Wind Exposure Category C. For design wind load, see Wind Loading table.

Vehicular collision forces are not included in the design of the sound walls.

Special Inspection is required for all masonry wall construction. Vertical cells containing reinforcements shall be grouted solid full height.

Bond Beams with reinforcements shall be grouted solid full length.

All Concrete shall be Class "S" (f'c = 3,000 psi).

Reinforcing steel shall conform to ASTM A615. All reinforcing shall be furnished as Grade 60.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 2 inch clear cover unless noted otherwise.

Compact backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

See Project Plans for wall layout, top of footing and finished grade elevations, footing step and wall joint locations. Height of wall may vary ± 2 inches. Control joints shall occur at intervals not to exceed 24'-0. See Project Plans for wall surface treatment and type of block.

Pay item measure of square foot of wall constructed will be measured along the front face of the wall from top of footing to top of wall cap.

Dimensions shall not be scaled from drawings.

**WALL DESIGN NOTES:**

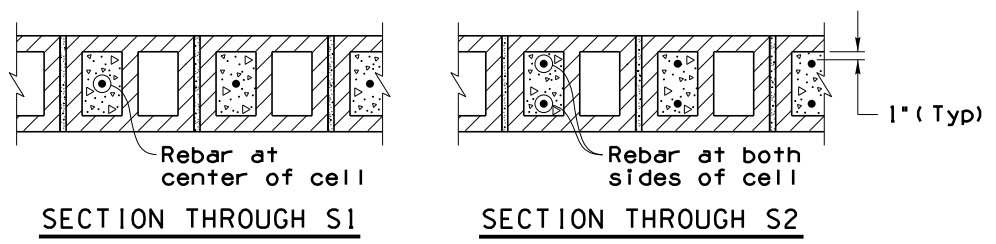
Sound barrier walls selection shall be based on the noise analysis. The wall selected shall account for a future 4 foot wall height extension.

Values shown in the wall schedule represent the design values for each wall height including a future 4 foot extension. No modifications to the wall schedule will be needed to extend the wall a maximum of 4 feet.

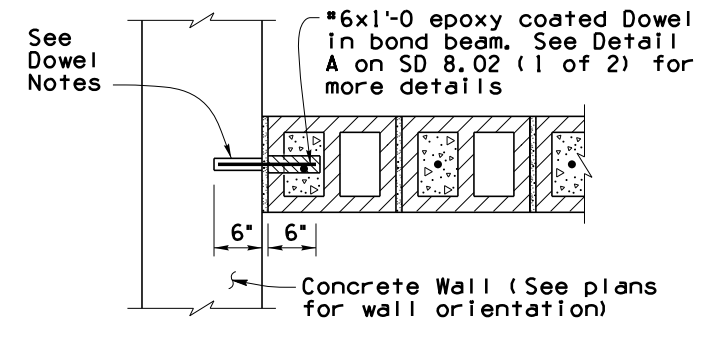
Wall designer shall note on the plans that the wall has been designed to allow for a 4 foot extension.

The maximum wall height selected from the wall schedule shall not exceed 26'-0 to allow for a 4 foot future wall extension.

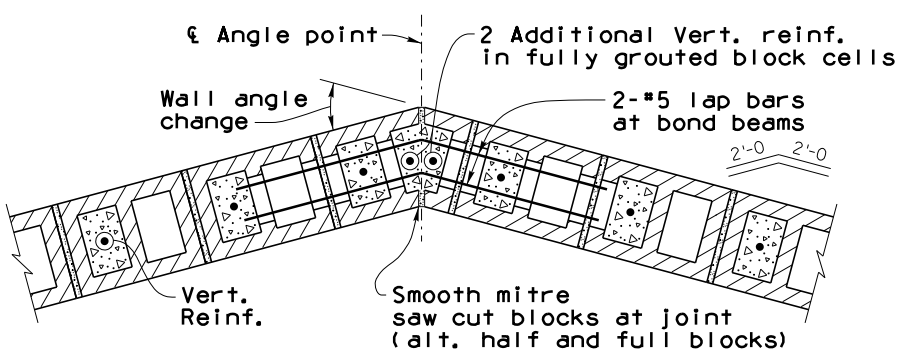
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without the approval of a professional engineer. The information is intended for use by a professional engineer. Contents within the inner border line shall not be altered.



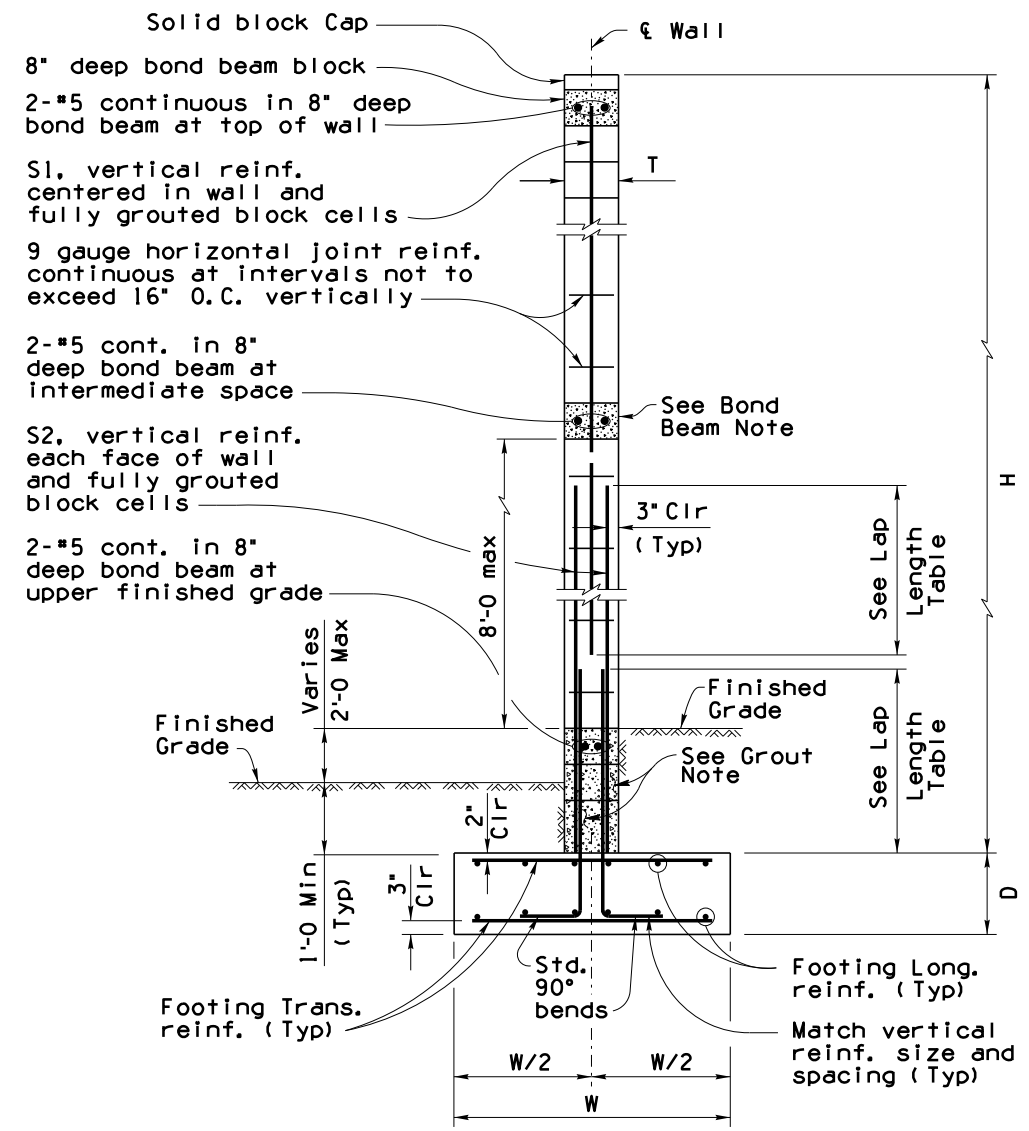
TYPICAL SECTIONS THROUGH VERTICAL WALL REINFORCEMENT



CONNECTION TO CONCRETE WALL



SECTION AT WALL ANGLE POINT



TYPICAL WALL SECTION (For Wall Height 14'-0 to 26'-0)

**GROUT NOTE:**  
Fully grout all block cells below the upper Finished Grade Line.

**NOTE:**  
See SD 8.02 (1 of 2) "Wall Details at Joints and Ends" for details not shown on this sheet.

**MATERIAL NOTES:**

- Masonry: f'm = 1500 psi, ASTM C90, Medium or Normal weight, Running Bond, SLUMP BLOCK unless noted otherwise.
- Mortar: ASTM C270, Type S, Cube Strength 1800 psi ASTM C91 cement
- Grout: ASTM C476, Type Coarse, Cube strength 2000 psi
- Reinforcing Steel: ASTM A615, Grade 60
- Joint Reinforcing: 9 Gauge Ladder or Truss type, Standard weight, fy=33,000 psi, ASTM A82 Wire

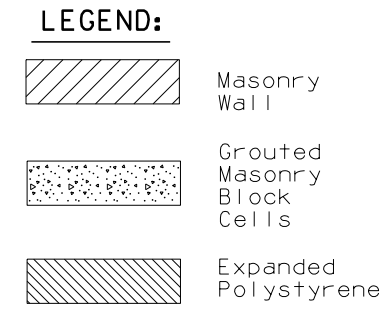
**SPECIAL INSPECTION NOTES:**

- Special inspection and testing, provided by the Department, are required for the masonry noise wall stem to assure quality materials and construction.
- (A) Pre-construction:
- 1) Verify correct block type to be used.
  - 2) Verify correct mortar and grout to be used.
  - 3) Verify the location, spacing, size and lap length of vertical reinforcing dowel bars and wall reinforcement that is within plus or minus 1/2" of the plan dimension as measured normal to the wall and plus or minus 2" in the longitudinal direction.
  - 4) Verify that masonry units are clean and free from dirt when placed in the wall. Masonry units shall be dry before placement.

- (B) Construction:
- 1) Observe, periodically, the placement of the masonry units and the making of the mortar. Verify that the initial bed joint thickness is not less than 1/4" or more than 1"; subsequent bed joints shall not be less than 1/4" or more than 3/8" in thickness.
  - 2) Observe all grout placements.
  - 3) Verify horizontal joint reinforcing size, location, and spacing.
  - 4) Verify that all concrete masonry units are placed in uniform and true course, level and plumb with a tolerance of 1/4" in 8 feet, non-cumulative.
  - 5) Verify that concrete masonry units are placed to the desired height with joints of uniform thickness. Level, plumb and straighten before the mortar stiffens. Bond shall be plumb throughout.
  - 6) Verify that all concrete masonry units are cured by sprinkling twice a day for minimum of 2 days.

WALL SCHEDULE								
Wall Design Height H	** Wall Thick T	Footing Depth D	Footing Width W	*** Reinforcing Steel				Factored Average Soil Bearing Pressure (psf)
				Wall		Footing		
				S1 Vert. Reinf.	S2 Vert. Reinf.	Trans. Reinf.	Long. Reinf.	
14'-0 to 15'-11	12"	1'-9	6'-0	#5@16"	#5x6'-6 @ 16"	#5@16"	#5@16"	1,900
16'-0 to 17'-11	12"	2'-0	6'-3	#6@16"	#6x6'-6 @ 16"	#6@16"	#5@16"	2,100
18'-0 to 19'-11	12"	2'-3	6'-6	#8@16"	#6x7'-0 @ 16"	#6@16"	#5@16"	2,300
20'-0 to 21'-11	12"	2'-6	6'-9	#8@16"	#7x8'-0 @ 16"	#6@16"	#5@16"	2,600
22'-0 to 23'-11	12"	2'-9	7'-3	#8@16"	#7x8'-6 @ 16"	#6@16"	#5@16"	2,800
24'-0 to 26'-0	12"	3'-0	7'-6	#8@16"	#7x9'-0 @ 16"	#6@16"	#5@16"	3,000

\*\* Nominal Dimension      \*\*\* Additional Reinf. required at Control Joints



**DOWEL NOTES:**

Drill 1 inch diameter hole 6 inches deep for #6 dowel. Epoxy dowel in hole with an approved epoxy adhesive. Epoxy anchorage shall develop a tensile pullout strength of 13 kips. Details of the anchorage system shall be submitted to the Engineer for approval prior to installation.

Dowel placement includes drilling or coring dowel holes, furnishing and placing setting materials and placing metal dowels in the drilled or cored holes.

STANDARDS ENGINEER <b>A. ALZUBI</b>	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER <b>D. EBERHART</b>	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	SOUND BARRIER WALL MASONRY
06/22 DATE	DRAWING NO. <b>SD 8.02</b> (2 of 2)